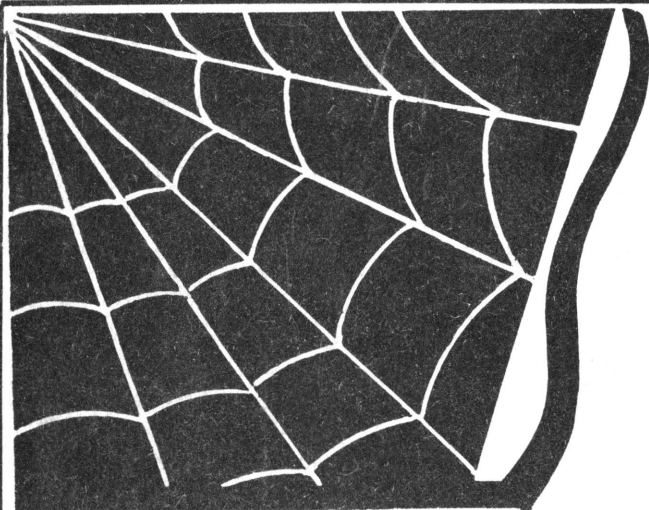

Covering the TI99/4A, the Myarc 9640 and compatibles

MICROpendium

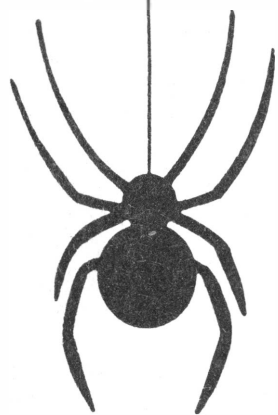
Volume 5 Number 9

October 1988

\$2.00



Configuring Funnelweb



In the dark about this program? Jim Swedlow's tutorial sheds light on it, step by step.

Page 21

ALSO:

☒ Telecommunicating on the networks ☒ Regena on BASIC
☒ Mini-Reviews debut ☒ Chicago TI-Faire ☒ Tips for hard disk
users ☒ Mike Dodd on Geneve 9640 ☒ The index continues ☒

1988 PRICES SLASHED

**NEW LOW PRICES ON
PERIPHERALS AND
SOFTWARE... OUR
LOWEST PRICES
EVER!!!!!!**

Tex-Comp
P.O. Box 33084, Granada Hills, CA 91344



**ORDER BY
PHONE**

Charge-It On Your
Visa or MasterCard

(818) 366-6631

24 HOURS a day-

Send for **1988 Tex-Comp catalog &
buyer's guide only \$2.00** (comes with \$5
savings certificate)

TI-99/4A Home Computer The System. The Software.

Better to start with. Better to stay with. Better to grow with.

Software

HOME ENTERTAINMENT

MODULES

PHM 3023	Hunt the Wumpus.....	4.95
PHM 3030	Amazing.....	4.95
PHM 3052	Tombstone City.....	4.95
PHM 3053	TI Invaders.....	4.95
PHM 3054	Car Wars.....	4.95
PHM 3057	Munch Man.....	4.95
PHM 3056	Alpiner.....	4.95
PHM 3112	Parsec.....	4.95
PHM 3031	The Attack.....	4.95
PHM 3032	Blasto.....	4.95
PHM 3194	Jawbreaker II.....	5.95
PHM 3110	Chisholm Trail.....	5.95
PHM 3034	Hustle.....	6.95
PHM 3037	Hangman.....	6.95
PHM 3025	Mind Challengers.....	8.95
PHM 3036	Zero Zap.....	8.95
PHM 3038	Connect Four.....	8.95
PHM 3042D	Tunnels of Doom (with disk).....	9.95
PHM 3042T	Tunnels of Doom (with tape).....	9.95
PHM 3067	Othello.....	9.95
PHM 3220	Micro Surgeon.....	9.95
PHM 3219	Super Demon Attack.....	9.95
PHM 3224	Moonsweeper.....	9.95
PHM 3222	Fathom.....	9.95
PHM 3233	Burgertime.....	9.95
PHM 3131	Moonmine.....	9.95
PHM 3146	Munchmobile.....	11.95
PHM 3197	Slymoids.....	15.95
PHM 3226	Buck Rogers.....	15.95
PHM 3227	Congo Bongo.....	15.95

ADVENTURES

PHM 3041D	Adventure Module & Pirate Adv.(disk).....	6.95
PHM 3041T	Adventure Module & Pirate Adv.(tape).....	6.95
ADVENTURE SERIES (must be used with PHM 3041 module) specify disk or tape with order		
	Adventureland.....	4.95
	Mission Impossible.....	4.95
	Voodoo Castle.....	4.95
	The Count.....	4.95
	Strange Odyssey.....	4.95
	Mystery Fun House.....	4.95
	Pyramid of Doom.....	4.95
	Ghost Town.....	4.95
	Savage Island I&II (two adventures).....	4.95
	Golden Voyage.....	4.95
	Knight Ironheart Adventure.....	4.95
	****SPECIAL-ALL ABOVE ADVENTURES ON DISK OR TAPE.....	17.95
	Spiderman Adventure.....	7.95
	Incredible Hulk Adventure.....	7.95
	Buckaroo Banzai Adventure (based on the movie).....	7.95
	Sorcerer of Claymorgue Castle.....	7.95
	****SPECIAL-ALL OF THE ABOVE FOUR + HINT BOOK + TWO NEW BONUS ADVENTURES.....	17.95
	****SUPER ADVENTURE SPECIAL-BOTH OF THE ABOVE SPECIALS +COMPLETE HINT BOOK+ADVENTURE MODULE.....	29.95
PHM 3189	Return to Pirate's Island self contained adventure on module with graphics).....	11.95
MBX Programs (MBX Unit Required)		
PHM 3154	Terry Turtle's Adventure.....	2.95
PHM 3155	I'm Hiding.....	2.95

COMPUTER PROGRAMMING AIDS

MODULES

PHM 3999	Super Extended Basic.....	49.95
PHM 3026	Extended Basic.....	39.95
PHM 3058	Editor Assembler.....	9.95
PHM 3058	Mini Memory (with Writer II).....	12.95

DISKETTE PROGRAMS

PHD 5007	Teach Yourself 99/4A Basic.....	4.95
PHD 5019	Teach Yourself Extended Basic.....	4.95
PHD 5004	Programming Aids I.....	4.95
PHD 5005	Programming Aids II.....	4.95
PHD 5012	Programming Aids III.....	4.95
PHD 5017	Programming Aids I, II, III.....	9.95
PHD 5067	Beginning Basic Tutor.....	4.95
PHD 5076	Text to Speech (Ex Basic Speech).....	4.95
PHD 5098	TI Forth & manual (Ed/Assem req.).....	19.95
PHD 5078	TI Forth Demo Disk (Ed/Assem).....	4.95
PHD 5079	TI Forth Source Code (2 disks).....	7.95

CASSETTE PROGRAMS

PHT 6006	Programming Aids I.....	4.95
PHT 6007	Teach Yourself 99/4A Basic.....	4.95
PHT 6019	Teach Yourself Extended Basic.....	4.95
PHT 6067	Beginning Basic Tutor.....	4.95

EDUCATION

MODULES

PHM 3002	Early Learning Fun.....	4.95
PHM 3003	Beginning Grammar.....	4.95
PHM 3010	Physical Fitness.....	4.95
PHM 3010	Music Maker.....	9.95
PHM 3021	Weight Control & Nutrition.....	10.95
PHM 3109	TI LOGO II (32K req.).....	12.95
PHM 3015	Early Reading (speech syn. req).....	9.95
PHM 3043	Reading Fun.....	9.95
PHM 3046	Reading On.....	9.95
PHM 3047	Reading Roundup.....	9.95
PHM 3048	Reading Rally.....	9.95
PHM 3082	Reading Flight.....	9.95
PHM 3027	Addition & Subtraction I.....	9.95
PHM 3028	Addition & Subtraction II.....	9.95
PHM 3029	Multiplication I.....	9.95
PHM 3049	Division I.....	9.95
PHM 3050	Numeration I.....	9.95
PHM 3051	Numeration II.....	9.95
PHM 3060	Scholastic Spelling 4 (speech).....	9.95
PHM 3061	Scholastic Spelling 5 (speech).....	9.95
PHM 3062	Scholastic Spelling 6 (speech).....	9.95
PHM 3091	Milliken Subtraction.....	9.95
PHM 3092	Milliken Multiplication.....	9.95
PHM 3093	Milliken Division.....	9.95
PHM 3094	Milliken Integers.....	9.95
PHM 3098	Milliken Number Readiness.....	4.95
PHM 3099	Milliken Laws of Arithmetic.....	4.95
PHM 3100	Milliken Equations.....	4.95
PHM 3101	Milliken Measurement of Formulas.....	4.95
PHM 3114	Alligator Mix.....	6.95
PHM 3115	Alien Addition.....	6.95
PHM 3119	Meteor Multiplication.....	6.95
PHM 3118	Minus Mission.....	6.95
PHM 3177	Face Maker.....	9.95
PHM 3178	Story Machine.....	9.95

DISKETTE PROGRAMS

PHD 5009	Music Skills Trainer.....	4.95
PHD 5011	Computer Music Box.....	4.95
PHD 5018	Market Simulation.....	4.95
PHD 5030	Speak & Spell II (Ex Basic req.).....	9.95
PHD 5031	Speak & Math (TE-II req.).....	4.95
PHD 5042	Spell Writer (TE-II req.).....	4.95

DISKETTE PROGRAMS **NEW LOW PRICES!**

PHD 5002	TI-TREK(TE-II req. for speech).....	4.95
PHD 5010	Mystery Melody.....	4.95
PHD 5015...	Oldies But Goodies I.....	4.95
PHD 5017	Oldies But Goodies II.....	4.95
****SPECIAL	Oldies But Goodies I & II.....	7.95
PHD 5025	Sat. Night Bingo (Ex-Basic & Speech).....	4.95
PHD 5037	Draw Poker (Ex-Basic).....	4.95
CASSETTE PROGRAMS		
PHT 6002	TI-Trek (TE-II req. for speech).....	4.95
PHT 6010	Mystery Melody.....	4.95
PHT 6015	Oldies But Goodies I.....	4.95
PHT 6017	Oldies But Goodies II.....	4.95
****SPECIAL	Oldies But Goodies I & II.....	7.95
PHT 6026	Sat. Night Bingo (Ex-Basic & Speech).....	4.95
PHT 6037	Draw Poker (Ex-Basic).....	4.95

TEX+COMP

Visa & Mastercard Holders Call Direct 24-Hour Order Line

(818) 366-6631

The BIGGEST TI-99/4A SOFTWARE OFFER EVER

TEXAS
INSTRUMENTS
&
TEX+COMP
Announce
**DRASTIC PRICE REDUCTIONS
ON TEXAS INSTRUMENTS
COMPUTER
SOFTWARE**



DISKETTE PROGRAMS NEW LOW PRICES!

PHD 5026	Bridge Bidding I.....	4.95
PHD 5039	Bridge Bidding II.....	4.95
PHD 5041	Bridge Bidding III.....	4.95
PHD 5020	Music Maker Demo (use with module).....	4.95

CASSETTE PROGRAMS

see disk versions for req. i.e. TE-II

PHT 6009	Music Skills Trainer.....	4.95
PHT 6011	Computer Music Box.....	4.95
PHT 6018	Market Simulation.....	4.95
PHT 6031	Speak & Math.....	4.95
PHT 6042	Spell Writer.....	4.95
PHT 6026	Bridge Bidding I.....	4.95
PHT 6039	Bridge Bidding II.....	4.95
PHT 6041	Bridge Bidding III.....	4.95
PHT 6020	Music Maker Demo (use with module).....	4.95

TI-COUNT SMALL BUSINESS SOFTWARE

General Ledger	
Accounts Receivable	
Accounts Payable	
Inventory	
Payroll	
Mail System	
SPECIAL 1988 OFFER	ALL SIX PROGRAMS PLUS AUTO COUNT AUTO EXPENSE RECORD PROGRAM.....89.95
A \$250.00 SAVINGS !!!!!	

**New Lower
Price**



MANAGEMENT AND SMALL BUSINESS

MODULES

PHM 3006	Home Financial Decisions.....	4.95
PHM 3007	Household Budget Management.....	4.95
PHM 3022	Personal Real Estate.....	4.95
PHM 3016	Tax/Investment Rec. Keeping (disk req.).....	4.95
PHM 3035	Terminal Emulator II.....	9.95
PHM 3044	Personal Report Generator (PRK req.).....	10.95
PHM 3113	Multiplan.....	14.95
PHM 3112	TI Writer.....	14.95
PHM 3013	Personal Record Keeping.....	15.95

DISKETTE PROGRAMS NEW LOW PRICE!

PHD 5001	Mailing List (upgraded version).....	4.95
PHD 5003	Personal Financial Aids.....	4.95
PHD 5021	Checkbook Manager.....	4.95
PHD 5022	Finance Manager.....	4.95
PHD 5024	Inventory Management.....	4.95
PHD 5027	Invoice Management.....	4.95
PHD 5029	Cash Management.....	4.95
PHD 5038	Lease/Purchase Decisions.....	4.95
PHD 5075	TI/Multiplan upgrade disk.....	4.95

CASSETTE PROGRAMS

PHT 6003	Personal Financial Aids.....	4.95
PHT 6038	Lease/Purchase Decisions.....	4.95

Send for **1988 Tex-Comp catalog & buyer's guide** only \$2.00 (comes with \$5 savings certificate)

Send order and make checks payable to

TEX+COMP

PO Box 33804, Granada Hills, CA 91344

TERMS: All prices F.O.B. Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 minimum). East of Mississippi 4 1/2%. Add 3% for Credit Card orders. Prices and availability subject to change without notice. We reserve the right to limit quantities.

TEX+COMP
AUTHORIZED DEALER



VISA and MASTERCARD
HOLDERS CALL DIRECT
(818) 366-6631
24 Hour Order Line

NOTE: Payment in full must accompany all orders. Credit card. Company check or Money order for immediate shipment. Personal Checks require up to 4 weeks to clear. California orders add 6 1/2% sales tax.

PROTECT YOUR INVESTMENT WITH A BACK-UP TI99/4A

At only \$79.95 the Texas Instruments 99/4A home computer is still the wisest choice for any individual or family just starting out in computing. But for those of you who already own a 99/4A and have purchased hundreds or even thousands of dollars in peripherals and software, buying a back-up computer for under eighty dollars is the smartest and least expensive way to protect the investment in your system.

\$79.95*



TI-99/4A

Are you using your 99/4A in the office and wish you had another to use at home? Is your family squabbling over who gets the computer first? You can put your back-up computer to use at once to solve these problems, and rest assured that your primary system is protected too.

Time is running out. The Texas Instruments home computer will not be available for sale much longer. Buy your back-up TI-99/4A now and protect your home computer system investment for the years to come.

*Shipping, handling & insurance on this special offer is \$10.00 (Continental U.S.) to any UPS deliverable address, HI, AK, Canada and APO slightly higher.

**Original TI Joysticks
\$7.95 (pair)**

**Replacement Console
Power Supply
(external transformer)
\$9.95**

**Replacement 99/4A
Keyboards
(plug in connection)
\$7.95**

**Cassette Cable
\$5.95
Console Dust Covers
\$7.95**

Contents

MICROpendium

MICROpendium is published 12 times annually for \$20 per year by Burns-Koloen Communications Inc., 16606 Terrace Dr., Austin, TX 78728. Application to Mail at Second-Class Postage Rates is Pending at Round Rock, Texas. POSTMASTER: Send address changes to MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

No information published in the pages of MICROpendium may be used without permission of the publisher. Only computer user groups that have exchange agreements with MICROpendium may excerpt articles appearing in MICROpendium without prior approval.

While all efforts are directed at providing factual and true information in published articles, the publisher cannot accept responsibility for errors that appear in advertising or text appearing in MICROpendium. The inclusion of brand names in text does not constitute an endorsement of any product by the publisher. Statements published by MICROpendium which reflect erroneously on individuals, products or companies will be corrected upon contacting the publisher.

Unless the author specifies, letters will be treated as unconditionally assigned for publication, copyright purposes and use in any other publication or brochure and are subject to MICROpendium's unrestricted right to edit and comment.

Display advertising deadlines and rates are available upon request.

All correspondence should be mailed to MICROpendium at P.O. Box 1343, Round Rock, TX 78680. We cannot take responsibility for unsolicited manuscripts but will give consideration to anything sent to the above address. Manuscripts will be returned only if a self-addressed stamped envelope is included.

Foreign subscriptions are \$25.25 (Canada and Mexico); \$23.50, surface mail to other countries; \$37 airmail to other countries.

All editions of MICROpendium are mailed from the Round Rock (Texas) Post Office.

Mailing address: P.O. Box 1343, Round Rock TX 78680

Telephone: (512) 255-1512

Source: TI4596

CompuServe: 75156,3270

Delphi TI NET: MICROPENDIUM

Genie: J.Koloen

John Koloen.....Publisher
Laura Burns.....Editor

Regena on BASIC

TRACE and UNTRACE.....Page 10

c99

Two-dimensional arrays.....Page 12

Configuring Funnelweb

Jim Swedlow presents a tutorial on this popular utility..Page 21

Geneve 9640

Mike Dodd on redefining colors from MDOS.....Page 24

Faire time

Asgard's Press scheduled to debut in Chicago.....Page 33

More hard disk tips

Doing periodic backups not a bad idea.....Page 36

Myarc Q&A

MDOS 1.14, Myarc Advanced BASIC ready, and answers to questions from readers.....Page 37

Reviews

Bunyard Hardware Manual.....Page 38

Micro-reviews: Writerease Update, M-COPY, Disk of Dinosaurs, Infocom Fast Loader.....Page 39

More MICROpendium index

Finishing 1984 and on to 1985.....Page 41

Newsbytes

Texaments support packages, Donaldson Software cuts prices and Mike Dodd's Paper Copy is released.....Page 43

User Notes

AUTOEXEC from a hard disk, checking your Alpha Lock status, and a hard disk path for TELCO.....Page 44

Classified.....Page 46

Programming conventions

Here are some tips to help you when entering programs from MICROpendium:

1. All BASIC and Extended BASIC programs are run through Checksum, the numbers that follow exclamation at the end of each program line. Do not enter these numbers or exclamation points. Checksum was published in the October 1987 edition.
2. Long XBASIC lines are entered by inputting until the screen stops accepting characters, pressing Enter, pressing FCTN REDO, cursoring to the end of the line and continuing input.

Best Buys From TENEX

No Gimmicks, No Hidden Charges, No Nonsense, Just Low Prices and Great Service!

FREE

Dust Cover & Everything Book

Discover the savings and easy shopping available from TENEX Computer Express PLUS receive a **FREE** dust cover for your TI Cover is anti-static, 8-gauge vinyl sewn to our exacting standards with reinforced seams. Custom tailored with exclusive rear corner slit accommodating cables and speech synthesizer. Show your computer you care. Get to know our great products, extensive selection and fast service with a **FREE** copy of our *Everything Book* for TI. (\$2.95 Shipping Charge)

10017 TI Console Cover & Catalog (M6D)

From

microfal

The 39¢ Diskette

Are you paying too much for diskettes? Try our first quality, prime, 5-1/4" diskettes (no rejects, no seconds) at these fantastic sale prices and save, save, **SAVE!** Diskettes are packaged in boxes of 50; including diskettes in sleeves, labels, and write-protect tabs.

Each diskette is certified to be 100% error free and comes with a lifetime warranty (if you have a problem, we'll replace the diskette). All diskettes include hub reinforcement rings and write-protect notch.

All diskettes are double-density and work in either single or double-density drives.

SS, DD Diskettes, Box of 50
32391 \$19.50 - 39¢ ea.
DS, DD Diskettes, Box of 50
32403 \$24.50 - 49¢ ea.



Diskette Storage

- 100 disk (5-1/4") capacity.
- Lock and keys for extra security and easy carrying.
- Includes 8 Index dividers with labels for organization of filing and retrieval.
- Made of durable anti-static, high impact plastic.
- Attractive smoke color lid. Sug. Retail \$19.95

66826

NOW ONLY \$9⁹⁵

Hardware

Printers

Okidata 180 Printer\$224.95
Okidata 120 Printer\$189.95
Okidata Microline 183.....\$279.95
Star NX-1000\$CALL
Star NX-1000 Rainbow\$CALL
Star NX-15\$CALL
Selkosh SP-180\$169.95
Selkosh SP 1200-AI\$199.95
Selkosh SP 1600-AI.....\$CALL

Computers

Geneve 9640\$CALL
Amiga 500\$CALL
Amiga 2000\$CALL
TENEX Turbo (Loaded)\$595.00

Monitors

13" Color Composite.....\$CALL
Magnavox CM8762, Color...\$269.95

Joysticks/Controllers

NEW! Wilco Ergostick\$19.95
Epyx 500XJ\$15.95
Suncom Tac 5\$14.95
TI Adapter\$5.95

P-Box Cards

CorComp RS-232\$89.95
CorComp 32K\$119.95
CorComp 9900 Disk Cont.\$149.95
CorComp 512K\$253.00
Myarc RS-232\$99.95
Myarc 512K w/XB\$289.95
Rave Speech Card\$49.95

Accessories

Rave 105 Keyboard\$199.95
Universal Printer Stand+\$14.95
Data Transfer Switch\$24.95
RF Modulator (99/4A)\$19.95
Power Transformer (99/4A)\$19.95
1/2 Ht. 360K Floppy Drive\$99.95
Parallel Printer Cable 5 ft.\$24.95
Parallel Printer Cable 10 ft.\$34.95
Composite Monitor Cable\$7.95
TI Cart. Expander\$19.95

Ribbons

NX-1000 Black\$5.95
Okidata 120/180/183.....\$7.95
Axiom GP-550\$10.95
Gemini 10X, SG-10/15\$2.99
NX - 1000 Rainbow9.95

TI 99/4A Software

Adv. Series Pkg., Disk\$17.95
Adv. Series Pkg., Cass.\$17.95
Better Banners, Disk\$19.95
Centipede, Cart.\$7.95
Certificate 99, Disk\$19.95
Console Writer, Cart.\$14.95
Donkey Kong, Cart.\$7.95
Font Writer II, Disk.....\$24.95
Nibbler, Disk\$9.95
Pac-Man, Cart.\$7.95
PEP, Disk\$59.95
Pro Typer, Cart.\$19.95
Printers Apprentice, Disk\$19.95
Print Wizard, Disk\$19.95
Terminal Emulator II\$19.95
TI Artist, Disk\$19.95
TI Logo II (module)\$29.95
TI Planner, Cart.\$26.95
TI Planner Plus, Cart.\$49.95
QS Sideways, Disk\$14.95
Real TV/IBM Connection\$59.95
Word Writer, Cart.\$39.95
Word Writer Plus, Cart.\$59.95
4A Flyer, Cart\$19.95
4A Talk, Disk\$19.95
99 Fortran, Disk\$49.95

Free! 48 Page "Everything" Book With Any Order!

\$89⁹⁵

Get TI-Count Accounting For Less

Pike Creek Accounting Package

This is the only accounting system to be endorsed for the TI 99/4A by Texas Instruments. It includes all the features of systems costing up to thousands of dollars for only a fraction of the price. You get all these: *General Ledger* - monitors up to 650 accounts, *Accounts Receivable* - keeps up to 200 customer accounts, *Accounts Payable* - features the ability to hold 200 vendor ledger accounts, *Inventory* - stores up to 700 items in 4 departments, *Payroll* - provides you with payroll checks and stubs of your choice, *Mail System* - change, move, or merge files. Get all 6 systems plus a bonus, the *Auto - Count Tax Log*.

75833 Pike Creek Accounting Package

\$89.95

\$24⁹⁵

Give The 'Foot' The Boot

You'll find our Peripheral Extension Cable to be a lifesaver. One end of this 30" cable plugs snugly into the expansion port on the right side of the 99/4A console; the other connects to the 44 contact slot of the PE Box cable, or any other stand-alone peripheral (such as the speech synthesizer, memory expansion, etc.). Customize your system set-up today!

22633 Peripheral Extension Cable **\$24.95**

THE BEST PRICES
THE BEST SERVICE

WHY SHOP ANYWHERE ELSE?

Gives You More Control

PIO PRINTER INTERFACE PLUS. You'll be able to connect any parallel input printer directly to your computer. Just plug one end into the side of your console and the other into the printer. 120 day warranty. From CorComp. Sug. Retail \$59.95

42250 Parallel Printer Interface

Only \$49⁹⁵

From Your Friends At

TENEX Computer Express

We gladly accept mail orders!
P.O. Box 6578
South Bend, IN 46660

Questions?
Call 219/259-7051

Ad M6D

Shipping Charges

Order Amount	Charge
less than \$19.99	\$3.75
\$20.00-\$39.99	4.75
\$40.00-\$74.99	5.75
\$75.00-\$149.99	6.75
\$150.00-\$299.99	7.75
\$300.00 & up	8.75



No Extra Fee For Charges!

ORDER TOLL FREE
1-800-348-2778

WE VERIFY CHARGE CARD ADDRESSES

APO, FPO, AK, HI, CN, VI, GU, and foreign orders are subject to additional shipping charges. NOTE: Due to publishing lead-times, product prices and specifications are subject to change without notice.

Fair season brings out new products

Fall is always a busy time for TIers, what with the numerous fairs and conventions going on and the introduction of new software — just in time for the Christmas rush.

In addition to the Chicago and Milwaukee fairs, November should see the introduction of a radically different word processor from Asgard Software, at the Chicago fair. Written by Charles Earl of TELCO fame, the Press word processor promises many features previously unavailable to TI users, not the least of which is a 100,000-word spelling checker. (Last month I touted it as a 120,000-word spelling checker. But what's 20,000 words among friends.) Chris Bobbitt of Asgard says Press incorporates the features of a number of word processors from the PC world, Word-Perfect among them.

Also in Chicago, Myarc will be showing the finished Myarc Advanced BASIC, the "H" version of MDOS, an EPROM that includes MDOS and GPL and possibly Pascal with a converted version of the Swan database ported to the Geneve from the PC world. MABASIC was said to be 99 percent complete when it was shown at the Seattle TI Fair in September.

MICROreviews DEBUTS THIS MONTH

Starting this month Harry Brashear will be writing a series of abbreviated reviews of products that might otherwise not be reviewed in these pages. Software authors, regardless of their distribution methods, may want to send copies of their programs to Harry for possible inclusion in MICROreviews.

John Birdwell's assembly language column isn't available this month. John is trying to catch up with his move to the Chicago area. We expect him back next month with more on MICRO-WORD.

We've delayed publishing a review of Texament's TI-Base data base manager because it's been updated and our reviewer, Bill Gaskill, wants the review the new version. He is rewriting his review and we expect (hope) to have it ready for the November edition. Incidentally, another database program, Genial Computerware's First Base, made an appearance at the TI fair in Harrisburg, Pennsylvania. We'll have a rundown of its features next month.

In doing research for our series on telecommunications networks, I've found that it is just about impossible to compare rates unless one is very specific. For example, the rates included with the article are mostly applicable to those who live in major cities in the continental U.S. That's because the networks provide local telephone connections for users. Get outside these major metro areas and you've got to start thinking about long distance charges or telephone networks (such as Tymnet and PC Pursuit), which generally increase the cost of going online but can

also save money. The networks frequently conduct special promotions to attract new customers that can slash or eliminate sign-up fees — unfortunately these are often advertised only on the boards themselves. Delphi has been advertising a reduced rate for new subscribers, but that's about the only service that reaches out into the print media for TI users.

In any case, I still don't know which one is the best deal.

A MAN ON A MISSION

Jim Horn, a sysop on CompuServe and an avid TIER, wants to recycle old TI99/4A. No, he doesn't want us to get rid of our systems, but he does want to get non-users to clean out their closets and put their unused 4As where they can be used, namely, classrooms.

What's the incentive for someone to give his dusty, unused TI away? Tax deductions, for one. Another is the satisfaction that comes with helping others, in this case students and teachers.

Of course, not every teacher is going to jump at the opportunity of acquiring a raft of inexpensive computers when he can have his school board pay thousands for the new technology. But, Jim points out, "if no one in a given school seems interested in a flood of FREE computers perfectly capable of teaching youngsters all they need to know about computers as well as being helpful tools in many other classes, move on. Find another school, another teacher."

What are the advantages of Horn's proposal for the active TI community? If it succeeds, it may increase our numbers and public awareness of the TI99/4A as an educational tool and a nifty machine.

Jim sees this project as well within the scope of user groups. Through creative use of press releases, dialogue with local teachers, principals and school board members, and an organized method of locating the unused TIs, user groups should be ideally suited to carry out this type of project. Especially if it is adopted as a group project.

It's a great idea, and it's something we all need to think about.

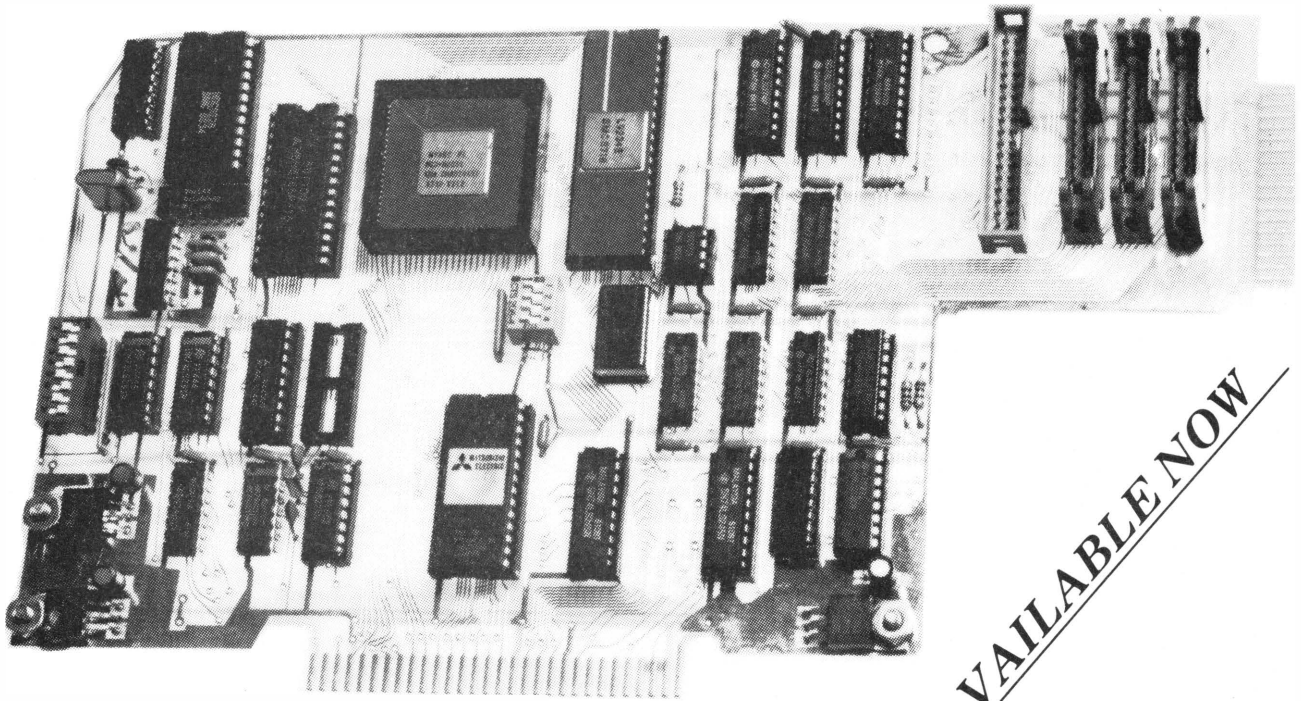
SHIPPING CHARGE FOR HOLDERS

We've once again run out of magazine holders, so bear with us. We've reordered and will fill orders as soon as the holders come in.

Unfortunately, we've been losing money on the holders because the price doesn't cover shipping. So, we're going to have to start charging for shipping. The shipping charge will be \$1. We will fill current orders without adding the charge, but please include an extra buck in the future.

—JK

THE MYARC Hard & Floppy Disk Controller with Streamer Tape Backup Support



AVAILABLE NOW

Features include:

- Hard drive transfer rate of 5Mbit per second, for speed comparable to an external RAM disk card
- Interfaces with standard, off the shelf, hard, floppy and streamer tape drives
- Built-in real time clock, for time and date stamping of files
- Supports up to four 5 1/4" and/or 3 1/2" floppy drives, mix or match
- All disk formats, SS/SD (90K), DS/DD (320/360K) and DS/QD (640/720K) supported
- MYARC Disk Manager V, the most intuitive and user friendly manager available
- One year limited warranty, 12 months parts, 6 months labor, is standard, an optional two, three or four year extended warranty is available

Feedback

Video display 'rules' violated

In regard to your article on the Yamaha V9938 by Tony Lewis in the September issue of MICROpendium, I want to express my appreciation for mentioning DIJIT Systems and our AVPC.

I would, however, like to address the "do-it-yourself" aspect of the article. While the V9938 is upwardly compatible with the TMS9918 series of VDPs it is not directly compatible with the TI99/4A computer. Aside from the sheer physical complexity of the V9938, the designers of the TI99/4A in Lubbock didn't play by the rules laid down by the Video Display Products Group in Houston, who designed the TMS9918A.

The Video Display Processors Programmer's Guide, SPPU004, states with regard to VDP Write-Only Registers on page 5-1, "In some of the registers not all eight bits are used. To insure software compatibility with the next generation Advanced Video Display Processor, the unused bits must be set to 0s." The Lubbock people must have reasoned that, since the registers didn't exist, it doesn't matter what is written, so they filled those bits with 1s. And there were other "Igotchas" to reckon with, the autoincrementing of the disk buffer into "Never-Never Land" and the RS232 bug that brought us to grief. Therein lies the crux of the incompatibility of the V9938 with the TI99/4A and some of the software that won't run on V9938 based video systems.

I'm sure other potential third party vendors met with frustration in dealing with the V9938 and some even admitted that they didn't think it was possible to incorporate it into the TI99/4A. Indeed, it took us a year and a half in hardware and software design to develop the AVPC into an acceptable package that operates out of the P-Box. To date we have sold many AVPCs and have experienced an extremely high reliability rate. While the AVPC is compatible with most existing TI99/4A programs, there is also a steadily growing body of software to take advantage of its special features.

I would like to thank our chief programmer, David Allen, for his dogged determination in solving the many software pro-

blems that beset us. I would also like to express my sincere appreciation to Barry Boone for all the work he has done in V9938 related programming. Barry has solved the compatibility problem with the Horizon RAMdisk with a "patch" to the ROS. This "fairware" is available for downloading from our bulletin board, (619) 278-8155, or directly from Barry Boone, P.O. Box 1233, Sand Springs, OK 74063.

Thomas Spillane
DIJIT Systems
San Diego, California

Cheers for CorComp

In the beginning some wise men of the West gathered together and said: "Behold there is a rising star in the personal computer sky called Texas Instruments, let us pay homage," and they did.

It came to pass that one of these wise men said: "But what is this *large* ugly appurtenance with limited capabilities attached to this star via a long flat black umbilical?" Plus after examining the new phenomenon the wise men had determined that unlike other stars it could only illuminate the populace with a double side *single* density light.

The wise men pondered and then gave birth to a different appurtenance, a *small* ugly box that they called a CorComp 9900. It had no umbilical and further had four red lights that sometimes flashed, but it could speak an augmented language called double sided *double* density; further, it included 32K of additional knowledge and could give pronouncements through an oracle known as an RS232 Oracle.

Their firstborn's abilities were announced far and wide but alas, the wise men found themselves in disagreement about many things and a new prophet came on the scene. Further, the new prophet said we must protect the newborn from the unholy, and invoked a gospel called Chapter 11 Bankruptcy; thus, the gospel of Jackie Sagouspe came into being.

During these difficult times additional small ugly black boxes were added that did such things as tell the time and date and let the populace not have to wait for printing to be completed before going on, as well as allowing the star's speaking ability to hide from sight. Then came the ability

to store one meg of knowledge and find that knowledge at astonishing speed.

The gospel of Jackie Sagouspe proved fruitful; prosperity came; the child started to mature and threw off the bondage of the Chapter 11 Bankruptcy. It further multiplied while adding the ability to write letters and even to save these letters in a revered format known as the IBM Format so they could be sent to practitioners of the IBM DOS teachings; and the star could diagnose some of its own illnesses and it could print without its CorComp 9900 appurtenance, but to do many of these wondrous things the star's breadth had increased to almost 1½ yards and it needed a resting place about the size of a Dutch door.

Not wishing to have their CorComp beliefs held up to ridicule by other practitioners of the TI99/4A arts, they called upon a foreign merchant named Tex-Comp who produced a cable called a PE Box Extender Cable. If ordered in a nine-inch version it allowed all of the small ugly black boxes to be mounted upside down underneath its now venerable console thus making for an uncluttered desk top although verily a narrow slot had to be cut into one's operating desk next to the peripheral slot in order to reach the profusion of small black boxes.

Nevertheless, the virtues of CorComp are many, for they include: never, never selling a product that doesn't work; never, never advertising a product that isn't currently for sale; never, never failing to make their service technicians readily available; nor is their management difficult to contact; and foremost, they beta test their products to assure their products do what they say they will do. Perhaps this is why the MICROpendium survey shows there are significantly more CorComp users than any other after market product users.

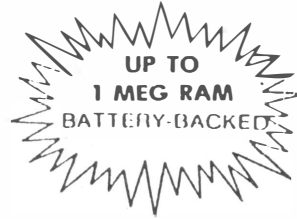
May we all beseech CorComp to produce a hard disk controller that adheres to CorComp's proven reputation!

Fred DuVall
Mission, Texas

The Feedback column is for readers. It is a forum to communicate with other readers. The editor will condense excessively lengthy submissions where necessary. We ask that readers restrict themselves to one subject for the sake of simplicity. Mail Feedback items to MICROpendium, P.O. Box 1343, Round Rock TX 78680.

SEND BUD MILLS SERVICES
ORDER 166 Dartmouth Drive
TO Toledo Ohio 43614

The HORIZON RAMDISK



Revised 10-15-88
PRICES Subject to CHANGE Due to present Economic Conditions and MEMORY SUPPLY
Please call (419) 385 5946 For a CURRENT Quote
These prices valid only TO Nov 15,1988

Type Kit		cost/ea
HRD+2000	ONE MEG	\$650.00
HRD+2000	800k/GENEVE	\$550.00
HRD+2000	512k	\$385.00
HRD+2000	384k DSSD	\$325.00
HRD+2000	192k DSSD	\$225.00
HRD+2000	96k SSSD	\$175.00
HRD+2000	Zero k no memory	\$125.00

Upgrade old 180k to
256k w/instructions... \$60.00

Mike Ballmans version of
32/16 Console Mem Mod \$36.00
w/John Guions switch Mod.

Bare HORIZON HRD+2000 card
Const MANUAL + MENU7.3 \$40.00
This card is EASIER TO BUILD
than the older HORIZON card.
Uses the HRD+ circuit without
stacking the control chips.

Pre-Built READY TO RUN ADD \$60.00
Pre-Built = Limited Warranty 90 Days

Above KITS include the HORIZON Card,
Instructions, MENU ROS and ALL parts.

Assistance or Repair Available

PHOENIX MOD to add	90k	\$80.00
a BOOT Drive to a	180k	\$120.00
384 - 800k/GENEVE	256k	\$145.00

An optional 32k Mem Mod can be
added to any HORIZON or HRD+
to replace the P-BOX 32k Card.
Mod includes instructions for
ALL HORIZON RAMDISKS... \$25.00

Deduct 5% IF you are purchasing 5 or More of the above Kits.....
Ohio Residents add 6% sales tax

Shipping and Handling included within U.S. and Canada
Shipping OverSeas ADD \$ 5 Surface or \$15 AirMail

MEMORY CHIP PRICES AND
AVAILABILITY ARE AGAIN
VERY UNSTABLE... CALL

Call TI-COMM BBS on 419 385 7484 for current prices or information
300 Baud, 7bit, even / 1200 baud, 8bit, no parity
GET Current Software Downloads SELECT MEG Info...M at sign on...

Please include your Name, Address AND Phone # with order...

*** Visa, MC, AmEx add 10% Call 1-800-456-9272 (DISK ONLY SOFTWARE) ***
+++++

ANNOUNCING THE P-GRAM CARD

By John Guion and Robert Jones
Produced by HORIZON COMPUTER
Distributor BUD MILLS SERVICES

The P-GRAM card is a GROM Emulation Card for use with the TI 99/4A
Requires Peripheral Expansion Box, 32k and Disk Drive.
The P-GRAM will save and run MODULES and is compatible with files
saved by the GRAM-KRACKER or Cart-Save.
A fully documented Source Code and USER Manual (on Disk DV80) allow
you to SAVE Modules, EDIT as you wish, LOAD to card and RUN.
The P-GRAM card contains 72k of battery backed RAM memory (1p CMOS)
40k GRAM for GROM emulating, 16k for Module RAM bank-switched, and
16k of DSR RAM also bank switched.
The Optional CLOCK is not required for proper operation of the P-GRAM,
but the price is right.

P-GRAM KIT=\$150.00 +Clock+\$20.00

FULLY ASSEMBLED, TESTED
and READY TO RUN,
WARRENTED 6 Mo.

WITH

P-GRAM=\$180.00
+Clock=\$200.00

Please Allow
2 to 4 Weeks
For Delivery

5% Discount on orders of 5 units or more. OHIO ORDERS add 6% sales tax
US and Canada Shipping included. Overseas \$5 Surface or \$15 AirMail.
ORDER From: BUD MILLS SERVICES 166 Dartmouth Dr. Toledo Oh. 43614
*** Visa, MC, AmEx add 10% Call 1-800-456-9272 (DISK ONLY SOFTWARE) ***

BASIC

Using the trace command

By REGENA

The TRACE command in TI BASIC and TI Extended BASIC can be handy in debugging a program or in following a program's progress. TI's commands of TRACE and UNTRACE are comparable to other computer versions' BASIC commands TRON and TROFF.

I think the best way for me to explain these commands is to have you sit at your TI computer while you are reading this column. Type in the sample programs, and you will be able to see how TRACE can work.

TRACE can be entered as a command or it can be entered with a line number as a statement within a program. It tells the computer to print the line number of the line being executed when a program is run. The computer will run the program normally except just before each line is executed the line will be printed on the screen in angle brackets. You will be able to see the sequence of lines as a program is run. UNTRACE tells the computer to turn off the tracing of line numbers.

Try this simple BASIC program:

```
100 PRINT "HELLO"
110 PRINT "SEE YOU LATER"
120 END
```

When you RUN the program, the result is
HELLO
SEE YOU LATER

**** DONE ****

Now, at the cursor, type in TRACE, then press the ENTER key. Next, type RUN and press ENTER. The result is

```
<100>HELLO
<110>SEE YOU LATER
<120>
```

**** DONE ****

The line numbers are shown in order just as in the program, and the computer executes the lines in numerical order. If you type UNTRACE then RUN the program will run without printing the line numbers. The NEW command also turns off TRACE.

As you know, the computer does not always just go line by line in numerical order through a program. Try this program:

```
100 FOR J=1 TO 5
110 PRINT J
120 NEXT J
130 END
```

Type TRACE then RUN the program. The result should look like this:

```
<100> <110> 1
<120> <110> 2
<120> <110> 3
<120> <110> 4
<120> <110> 5
<120> <130>
```

**** DONE ****

Notice that within the FOR-NEXT loop lines are repeated until the end condition is met. Now delete line 110, which is the PRINT statement. The computer still has a FOR-NEXT statement but will

not print the counting on the screen. Now when you RUN the program, it will look like this:

```
<100> <120> <120> <120> <120>
<120> <130>
```

**** DONE ****

The line numbers are printed across the screen, and the NEXT command is executed five times. The line numbers are printed one right after the other horizontally unless PRINT statements cause the computer to go to the next line (or if you have more than the screen width of characters).

An IF-THEN statement will also cause the computer to jump out of numerical order in executing statements. Type NEW, press ENTER, then enter this short program.

```
100 SCORE=SCORE+1
110 IF SCORE<10 THEN 100
120 PRINT "SCORE =";SCORE
130 END
```

This program increments the SCORE until it is 10, then the score is printed and the program ends. When you RUN the program, you will see just the final score printed. When you type TRACE then RUN the program, you can see how the IF statement transfers control back to Line 100 until the condition is met for Lines 120 and 130 to be executed.

Subroutines are also interesting to watch with the TRACE command. Try the following program.

```
100 GOSUB 500
110 PRINT "HELLO"
120 GOSUB 300
130 PRINT "BACK TO MAIN"
140 GOTO 600
200 PRINT "HOW ARE YOU?"
300 PRINT "SUBROUTINE"
310 RETURN
500 PRINT "GOOD DAY"
510 RETURN
600 END
```

RUN the program. This is what you should see:

```
GOOD DAY
HELLO
SUBROUTINE
BACK TO MAIN
```

**** DONE ****

Let's suppose you are trying to figure out why "HOW ARE YOU?" doesn't print. You can use TRACE to follow the computer's sequence of execution. Type TRACE and press ENTER, then type RUN. This time you will see the following:

```
<100> <511>GOOD DAY
<510> <110>HELLO
<120> <300>SUBROUTINE
<310> <130>BACK TO MAIN
<140> <600>
```

**** DONE ****

You can see that the computer never does execute Line 200 to

(See Page 12)

MX01 Memory Enhancement System

RAVE 99's NEW Memory Enhancement Card allows memory expansion for the TI-99/4A up to 544K BYTES of BACKED-UP Memory. Up to FOUR(4) memory cards may be installed in the PE Box which allows access to over 2 MEGABYTES of Memory.



COULD YOU BENIFIT FROM THE FOLLOWING FEATURES?

NEW!

1. 32K MEMORY EXPANSION BUILT ONTO CARD
2. NO ADDITIONAL PE BOX CARD SLOTS REQ.
3. 16K BYTES OF ADDITIONAL MEMORY FOR A TOTAL OF 48K BYTES OF DIRECTLY ADDRESSABLE MEMORY WITHOUT USING ANY SOFTWARE MEMORY MAPPING.
4. 5 DAYS OF MEMORY BACKUP WITHOUT THE USE OF BATTERIES OR EXTERNAL POWER SOURCE. OPTIONAL "LITHIUM" BATTERY MAY BE INSTALLED FOR "LONG TERM" BACKUP.
5. APPROVED ENGINEERING DESIGN, NO PIGGY-BACKING OF MEMORY CHIPS.
6. RUN EXTENDED BASIC PROGRAMS UP TO FOUR TIMES FASTER WITHOUT A CARTRIDGE WITH THE RAVE 99 VERSION OF MYARC'S XBII.
7. "SUPER CARTRIDGE" BUILT-IN. RUN SUPER CARTRIDGE PROGRAMS WITHOUT ANY CARTRIDGES.
8. USER DEFINED CARTRIDGES. LOAD THE LATEST VERSION OF FUNNELWEB FROM THE TI MENU SCREEN.
9. CREATE UP TO 9 RAMDISKS USING RAVE 99 RAMDISK SOFTWARE.
10. CREATE KEYBOARD MACRO'S FOR USE IN TI-WRITER OR EDITOR/ASSEMBLER. INITIATE COMPLEX COMMANDS WITH A SINGLE KEY PRESS.
11. PRINT SPOOLER SOFTWARE BEING DEVELOPED.
12. TWO "BACKED-UP" 8K BYTE RAM DSR'S
13. THREE MODELS AVAILABLE
 - MX01/64 - 64K BYTES - \$209.95
 - MX01/288 - 288K BYTES - \$324.95
 - MX01/544 - 544K BYTES - \$439.95

CARDS FULLY ASSEMBLED & TESTED. HIGH QUALITY CONSTRUCTION, 90 DAY WARRANTY

LIMITED TIME OFFER, RECEIVE THE RAVE 99 "RAMDISK" AND "KEYBOARD MACRO" SOFTWARE "FREE" WITH THE PURCHASE OF ANY MX01 CARD AND THIS AD.



SAVE \$40.00'S !!



OTHER INNOVATIVE PRODUCTS FROM RAVE 99 CO. !!!

\$199.95

MODEL 99/105 KEYBOARD ENHANCEMENT

SPEECH SYNTHESIZER ADAPTER CARD

* * LOW COST .. \$49.95 + \$2.50 for Shipping & Handling

RAVE 99

(203) 871-7824

112 RAMBLING ROAD, VERNON, CT. 06066
ADD 5% FOR SHIPPING, HANDLING, INS.
CT. RESIDENTS ADD 7.5% SALES TAX



VISA & Master Card Add 3%



NEW!

REGENA ON BASIC

(Continued from Page 10)

print "HOW ARE YOU?" You can also see what happens when the computer executes a GOSUB and RETURN. You can use the TRACE numbers to follow step by step what the computer is doing.

TRACE and UNTRACE may also be used within a program if you know only a certain section is giving you trouble. You may add a line with TRACE and later in the program add another line with UNTRACE. Only those program lines executed between TRACE and UNTRACE will be listed. For example, keep using the above program and type UNTRACE to get back to normal. RUN the program to make sure you are not getting the line numbers. Now add the following two lines (they will be in the subroutines).

```
505 TRACE
```

```
305 UNTRACE
```

Remember that you need to add TRACE in a line that is executed before the line that has UNTRACE. In this case the line numbers are not numerically in order, but the TRACE will be executed before the UNTRACE because the 500 subroutine will be executed before the 300 subroutine. Now try running the program. The result should look like this.

```
GOOD DAY
```

```
<510> <HELLO
```

```
<120> <300> SUBROUTINE
```

```
<305> BACK TO MAIN
```

```
** DONE **
```

Only the line numbers for lines executed between 505 and 305 will be TRACEd or listed.

I have used very simple programs to illustrate the use of TRACE, and in these programs you could probably follow the computer easily enough without using TRACE. I find TRACE handy in larger programs or in programs that other people have written and I need to find out what they had planned in their programming.

I have also used TRACE when the computer seems to "hang up" for a while. I insert TRACE after a line I know has executed, and the program will run normally up to that point, then start printing line numbers. It is possible that the computer gets caught in an "endless loop," and the TRACE command can let you know how long that loop operates. The cause could be a series of GOTO statements that keep looping, or a GOSUB loop that gets tangled up. Quite often an IF-THEN or IF-THEN-ELSE statement branches. If you notice an endless loop, you can interrupt the program with CONTROL-BREAK then PRINT values of the variables at that point. From there you can trace how the variables got those values and determine solutions to any programming problems.

My examples used PRINT statements. Notice that using TRACE prints line numbers on the screen and the PRINT statements may be shifted or the spacing may vary. If you use TRACE with a graphics program, the graphics will scroll up the screen as line numbers are printed, so later graphics may not form properly. Keep in mind that this problem will happen only while you TRACE and the graphics will go back to normal when you no longer print line numbers.

I hope this has helped you understand the TRACE and UNTRACE commands, possible uses for them and how they can really help a programmer.

Trials of a c99 beginner

Two-dimensional arrays

By CHARLES E. KIRKWOOD JR.

This month we will enter into the world of two-dimensional arrays which Clint Pulley added to Versions 3 and 4 of c99.

A general purpose sort program and a sort function are written. This program will sort character strings which includes numbers (both integers and floating-point). All numbers, however, must be right justified in order to be sorted properly; i.e., the right side of the numbers must line up.

But before taking up this new topic, a short quiz will be given. Unlike quizzes that you usually take, there will be no grade for this one and the only person to see your results will be you. **What is the output** of each of the three short programs given? Then type, compile, and assemble each one so that you can run them to obtain the results. You might be surprised at the answers.

```
/*QUESTION 1*/
```

```
main()
```

```
{
    int day[8];
    int i;
    day[0]="SUN";
    day[1]="MON";
```

```
    day[2]="TUE";
    day[3]="WED";
    day[4]="THU";
    day[5]="FRI";
    day[6]="SAT";
    for (i=0; i<=6; ++i)
    {
        puts("  ");
        puts(day[i]);
    }
```

```
/*QUESTION 2*/
```

```
/*Input the six days, press*/
/*<ENTER> after each.*/
```

```
main()
```

```
{
    int day[8];
    int i,k;
    char buff[25];
    for (i=0; i<=6; ++i);
```

(See Page 14)

\$250
Extra Special
OFFER
Cassette
Cable

LIQUIDATION SALE SUPER PRICE REDUCTION! TI 99/4A Owners NOW ONLY \$2.00 — CURRENT VALUES FROM \$9.95

**MONITOR
CABLE**
connects both
audio and video
\$250 (limited
quantity)

Go into business for yourself. Special discount on 1000 cassettes or more.
Call 407-843-0717 or 407-282-2842 for more information.

The following listing of TI 99/4A cassette software is now available for immediate shipment at reduced prices. Order 1 cassette for only \$2.00 plus \$.50 for shipping and handling. As a special exciting assortment offer, order:

5 cassette titles for only \$ 7⁵⁰ plus \$ 2.50 shipping & handling
10 cassette titles for only \$14⁰⁰ plus \$ 5.00 shipping & handling
15 cassette titles for only \$19⁵⁰ plus \$ 7.50 shipping & handling
20 cassette titles for only \$24⁰⁰ plus \$10.00 shipping & handling
25 cassette titles for only \$27⁵⁰ plus \$12.50 shipping & handling

ORDER NOW WHILE QUANTITIES LAST! USE THE ORDER FORM AND ENCLOSE CHECK OR MONEY ORDER.

	Compare with other ads: regularly	CJ's Liquidation		Compare with other ads: regularly	CJ's Liquidation
<input type="checkbox"/> PHT 2010 TV Monitor Cable		\$250	<input type="checkbox"/> PHT 6044 AC Circuit Analysis	\$8.95	\$200
<input type="checkbox"/> PHT 6003 Personal Financial Aids	\$9.95	\$200	<input type="checkbox"/> PHT 6046 Adventureland	\$9.95	\$200
<input type="checkbox"/> PHT 6004 Programming Aids	\$6.95	\$200	<input type="checkbox"/> PHT 6047 Mission Impossible	\$9.95	\$200
<input type="checkbox"/> PHT 6006 Math Routine Library	\$8.95	\$200	<input type="checkbox"/> PHT 6049 The Count	\$9.95	\$200
<input type="checkbox"/> PHT 6008 Electrical Engineering Library	\$8.95	\$200	<input type="checkbox"/> PHT 6050 Strange Odyssey	\$9.95	\$200
<input type="checkbox"/> PHT 6007 Teach Yourself Basic Part 2	\$6.95	\$200	<input type="checkbox"/> PHT 6051 Mystery Fun House	\$9.95	\$200
<input type="checkbox"/> PHT 6018 Market Simulation	\$8.95	\$200	<input type="checkbox"/> PHT 6052 Pyramid of Doom	\$9.95	\$200
<input type="checkbox"/> PHT 6016 Structural Engineering Library	\$8.95	\$200	<input type="checkbox"/> PHT 6053 Ghost Town	\$9.95	\$200
<input type="checkbox"/> PHT 6019 Teach Yourself Extended Basic	\$6.95	\$200	<input type="checkbox"/> PHT 6056 Golden Voyage	\$9.95	\$200
<input type="checkbox"/> PHT 6025 Bridge Bidding	\$9.95	\$200	<input type="checkbox"/> PHT 6067 Beginners Basic Tutor— Lessons 1, 2, 3, 4	\$6.95	\$200
<input type="checkbox"/> PHT 6031 Speak & Math	\$9.95	\$200	<input type="checkbox"/> PHT 6070 Logo Sampler		\$200
<input type="checkbox"/> PHT 6037 Draw Poker	\$7.95	\$200	<input type="checkbox"/> PHT 6071 Line by Line Assembler		\$200
<input type="checkbox"/> PHT 6038 Lease Purchase Decisions	\$9.95	\$200	<input type="checkbox"/> PHT 6101 Arcade Entertainment		\$200
<input type="checkbox"/> PHT 6042 Spell Writer	\$9.95	\$200	<input type="checkbox"/> Cassette Cable		\$250
<input type="checkbox"/> PHT 6043 Pirate Adventure	\$6.95	\$200			

\$.50 Shipping and Handling per item

C. J.'s Wholesale

210 E. Esther St., Orlando, FL 32806

Name _____
Address _____
City _____
State _____ Zip _____
Phone AC () _____

No. Cassettes Ordered _____
Total \$ Amount Ordered \$ _____
Shipping & Handling \$ _____
(\$.50 per item)
Total \$ Amount Enclosed \$ _____

c99—

```

        (Continued from Page 12)
        day[i]=gets(buff);
    for (i=0; i<=6; ++i)
    {
        puts(" ");
        puts(day[i]);
    }
}

/*QUESTION 3*/
/*Input same data as Question 2*/
main()
{
    int day[8];
    int i,k;
    char buff[25];
    for (i=0; i<=6; ++i)
    {
        k=gets(buff);
        strcpy(day[i],k);
    }
    for (i=0; i<=6; ++i)
    {
        puts(" ");
        puts(day[i]);
    }
}

```

```

}
/*from string function library*/
/*by Tom Wible*/
strcpy(s1,s2) /*copy s2 into s1*/
char *s1,*s2;
{
    while((*s1++)=(*s2++))
        ;
    return;
}

```

Pulley included a very helpful test program for two-dimensional arrays with V3 of c99. When an argument is preceded by the ampersand (&), the program passes the address of the argument to the function. Some rules for the C language are:

1. A name preceded by an & is a constant (an address).
2. Use this notation as an argument in a function call.
3. Use this notation to the right of the equal sign in an expression.
4. A pointer name preceded by an * is a variable. Its value is the contents of the pointer.
5. Use this notation when you declare a pointer.
6. Use this notation in an assignment statement on either side of the equal sign.

A simple example:

```

int a[5],x;
int *pa;
pa=&a[0]; /*sets pa to point to the zeroth*/
/*element of a; that is, pa contains*/
/*the address of a[0]*/
x=*pa; /*copies the contents of a[0] into x*/

```

Refer to a good C text for a complete discussion of pointers.


Character strings are actually an array of characters. So, an array of character strings is an array of an array, which is a two-dimensional array. The items in the SORT program can be input from the keyboard or a file and output to the screen or a file. Just follow the prompts when the program is executed. Remember that the ;C is omitted in the function names. The program will default to the keyboard and the screen.

```

/*SORT PROGRAM*/
#define dim 25
#include DSK1.STDIO
#include DSK1.STRING
#include DSK1.CONV
main()
{
    int i,m,n,c,d,df,f,in,out,col;
    char a[150][dim],buff[dim];
    c='K';
    d='S';
    col=dim;
    puts("Input File or Keyboard (F/K) ");
    c=getchar();
    putchar(10);
    if (c=='F')
    {

```

(See Page 15)


LAFLAMME & WRIGLEY WHOLESALE
 5480 Canotek Road, Unit #16
 GLOUCESTER, ONTARIO K1J 9H6
 (613) 745-2225

LAFLAMME & WRIGLEY DATA (Phones): Ottawa BBS (TEXLINK) (613) 738-0617
 DELPHI "JANELAFLAMME" (No space)
 CompuServe "76046,2006"

HARD DISK CONTROLLER CARDS ARE IN STOCK NOW!
 Authorized Canadian Distributer for Myarc, Inc.
Support your Canadian dealers:

COMPUTER DOWNLOAD UNLIMITED
 126 Sage Rd.
 North Bay, Ontario
 P1A 1A4
 (705) 476-0265
 TEXLINK BBS T.B.A.

DATA*PORT
 2846 Gottingen St.
 Halifax, N.S.
 B3K 3E1
 (902) 454-0232
 Data (TEXLINK) 455-2076

CANARIA DATA INC.
 264 Weber St. W.
 Kitchener, Ontario
 N2H 4A6
 (519) 578-3873

DATA*PORT
 2846 Gottingen St.
 Halifax, N.S.
 B3K 3E1
 (902) 454-0232
 Data (TEXLINK) 455-2076

DEALER ENQUIRES WELCOME

c99—

(Continued from Page 14)

```

puts("Disk File ");
df=gets(buff);
in=fopen(df,"r");
putchar(10);
}
puts("Output File or Screen (F/S) ");
d=getchar();
putchar(10);
if (d=='F')
{
    puts("File Name ");
    f=gets(buff);
    out=fopen(f,"w");
    putchar(10);
}
puts("Input number of items ");
m=gets(buff);
n=atoi(m);
n=n-1;
if(c=='F')
{
    for(i=0;i<=n;++i)
        fgets(&a[i][0],col,in);
}
else
{
    puts("Input items\n");
    for(i=0;i<=n;++i)
        gets(&a[i][0]);
}
sort(n,a);
putchar(10);
if(d=='F')
{
    for(i=0;i<=n;++i)
        fputs(&a[i][0],out);
}
else
{
    for(i=0;i<=n;++i)
        puts(&a[i][0]);
    putchar(10);
}
}
if(c=='F')
    fclose(in);
if(d=='F')
    fclose(out);
}

/*FUNCTION SORT*/
sort(n,s)
char s[][dim];
int n;
{

```

```

int i,j,k,m;
char t[dim];
m=n-1;
for(i=0;i<=m;++i)
{
    strcpy(&t[0],&s[i][0]);
    k=i;
    for(j=i;j<=m;++j)
    {
        if(strcmp(&s[i][0],&t[0])<0)
        {
            strcpy(&t[0],&s[j][0]);
            k=j;
        }
    }
    strcpy(&s[k][0],&s[i][0]);
    strcpy(&s[i][0],&t[0]);
}
return(s);
}

```

This program will sort 150 character strings such as names, addresses, numbers, etc., with less than 25 characters in ascending order. Change < to > in the sort function for descending order.

(See Page 20)

The wait is over! Now you can create and edit your own TI Runner screens!

TI RUNNER Level Editor

Only
\$18.95

by
EB Software

Only
\$18.95

The screen editor is designed to give **you** the **power** you need to add, edit, and manage your TI Runner screens. The system's easy to use menus and editor makes creating your own levels almost as much fun as playing them.

Includes:

1. TI Runner Level Editor
2. The Original 50 Levels
3. 44 Advanced Levels

Write to:

EB Software
905 West Middlefield #953
Mountain View, CA 94043

The Original TI Runner \$19.95
Galitic Battle/Spy Adventure Package \$14.95

TEX+COMP **FREEWARE** **DISKS**

Public Domain and Shareware Programs
Are Available from our Library, and Priced at **Only \$4⁹⁵ each**

**EXCITING NEW WAYS
TO USE YOUR TI-99/4A COMPUTER**

ORDERS SHIPPED OUT SAME OR NEXT DAY

GAMES

GREAT 99/4A GAMES VOL 1 (38) A collection of the very best. Professional quality.

GREAT 99/4A GAMES VOL 2 (39) Continuation of VOL 1 with more great action & graphics.

BEST OF BRITAIN VOL 1 (44) A collection of the best U.K. has to offer.

BEST OF BRITAIN VOL 2 (45) "Legend of Carfax Abby" an all graphics adventure.

GHOSTMAN (48) The fastest Pacman type game ever!

DEMON DESTROYER (49) Starts where invaders leaves off.

OH MUMMY!! (50) Search the tomb for treasure while being chased by mummies.

BERLIN WALL (51) Escape from E. Berlin and avoid mines.

FREDDY (60) Great action and graphics. Escape from an underground cavern. Great!!

THE MINE (61) Fast action and great graphics. Hours of excitement with this one!

TI RUNNER II (70) An all new upgrade of one of the best!

CHESS (68) The famous game Zargon. Loads from exbasic.

CHECKERS & BACKGAMMON (33) A collection of the best.

SOLITAIRE & SCRABBLE (34) A classic game collection!

WHEEL OF FORTUNE, BLACKJACK & JOKER POKER (2) Three of the best we have seen. So good you will expect Vana to appear!

STRIP POKER (13) When you win she loses everything!

ASTROBLITZ/MAZOG (63) Two professional quality action games you are sure to like!

MAJOR TOW/SPACE STATION PHETA (64) Two great space games!

PERFECT PUSH (65) One of the finest games ever written. Fantastic action and top notch graphics. Space game!

SUPER TRIVIA 99 (40) The best trivia games we have seen. Complete with questions!

RATED GAMB DEMO (26) The classic Space Invaders with "unusual" guns & targets. For Adults Only!

TI-99 OLOPY (12) Now you can play the famous board game right on your 99/4A. Do not pass GO!!!

EDUCATION

KIDS LEARNING VOL 1. (27) A 2-disk side collection of educational programs. Math, geography, reading and more.

MORSE CODE TRAINER (31) A professional program to learn and practice code.

ASTRONOMY (54) Plots the heavens and teaches you about the solar system.

KIDS LEARNING VOL 2. (71) Still more great learning programs. We only included the very best!

MUSIC

THE SINGING TI-99/4A (1) A 2 sided collection of songs where the computer actually sings. By Ken Gilliland. Requires speech syn.

TI MUSIC/GRAPHICS DEMO (5A) A great collection of music & matching graphics.

EXBASIC MUSIC DEMO (6) A 2-sided collection of great music with graphics. Hours of enjoyment!

COMPUTER PLAYER PIANO/CHORD ANALYSIS (69) A piano on the screen plays your selections or write your own with instructions incl.

Also a program to learn keyboard chord formation.

EXBASIC XMAS MUSIC (32) A 2-disk side collection of christmas and holiday music. Completely menu selectable!

SPREADSHEETS

SPREADSHEET DEMO (56) A complete spreadsheet program for learning and many applications. Easy to learn and use!

ACCOUNTING AND FINANCE

ACCOUNTS RECEIVABLE (20) A complete AR program with documentation. Won 1st prize in TI programming contest.

STRICTLY BUSINESS (36) A 2-disk side collection of programs for evaluating loans, interest, stocks etc.

DATABASE PROGRAMS

DATA BASE DEMO (21) A fully set up data base program designed for filing and finding magazine articles. Easy to use or modify for other applications. Sample data included!

PR BASE (58) This is a full feature DB freeware program that is rated as one of if not the best. Documentation included!

GRAPHICS

ANIMATION 99' (52) This is the one by Ray Kazmer that was featured in the July 88 Micropendium. See fantastic animation and also learn how it was done. This one is destined to be a classic.

ANIMATED XMAS CARD (11) This is the original animation by Ray Kazmer that made him an overnight superstar in the TI community. This classic is also referred to as "Woodstock" among TI'ers.

PRINTART DEMO (4) This 2-disk side collection prints well known comic and TV personalities out on your printer.

FIGURE STUDY (14) This is a collection of programs that print Playboy type center-folds out on your printer.

MONA LISA PRINTOUT (9) This program prints a near photo quality picture of Mona Lisa on your printer. You won't believe the quality!

SPACE SHUTTLE DEMO (7) An outstanding music/graphics program that salutes the U.S. space program. Its almost like watching a film.

STAR/EPSON DEMO (15) A 2-Disk side collection of programs to show you what your printer can really do. Also a great graphics tutorial with examples!

GOTHIC PRINT DISK (10) This program lets you type a message and then prints it out in Old English style. Looks like hand lettered calligraphy. Great for invitations, announcements.

SIDEWAYS PRINTOUT (16) Lets your printer print sideways. Great for spreadsheets and banners. Includes two versions and new Multiplan enhancements.

VIDEO GRAPHS (41) This disk is sold as a backup to owners of the discontinued TI Video Graphs module. We can only legally provide it to module owners.

TELECOMMUNICATIONS

TBLCO (57) This program has been rated as one of the best telecommunications programs for the TI-99/4A. A user supported program that contains everything you need to upload and download data with your modem. Supports all baud rates and protocols.

APPLICATIONS

WILL WRITER (23) Enter your answers to a group of questions and this program writes out a complete will.

MEDICAL ALERT (25) Contains many menu accessible files on what to do until the doctor or paramedics come. Could easily save a life!

ENGINEERING CALCULATIONS (24) A 2-disk side collection dozens of engineering and technical formulas. Does calculations, conversions, and even designs electrical circuits. Even contains medical and communications data and formulas.

LABEL MAKER (29) A pair of programs that let you make quick and easy labels for all purposes. Mail, disks, files etc. Uses standard tractor labels and even makes a graphic picture with the label text.

INFOCOM RAPID LOADER (47) A must for owners of Infocom 99/4A games. Loads games in seconds instead of minutes. Easy to use!

GENEALOGY (67) Now you can enter and arrange your family tree and print out copies for your relations. Also can be used if you breed animals such as dogs, cats or horses.

GRAPH MAKER (59) A collection of the best programs we have seen that produce graphs and charts from your data. Printer required!

HOUSEHOLD BUDGET PRINTOUT (30) This program lets you printout the data from the TI Household Budget module, an important feature that TI forgot.

Now get more out of your TI Computer—for less.

FREEWARE ONLY \$4⁹⁵ each

• Public Domain and Shareware Programs and Utilities to meet all your Computing Needs.

SPREADSHEETS

GAMES

UTILITIES

GRAPHICS

ACCOUNTING
AND FINANCE

SECURITY/HACKING

DATABASE
PROGRAMS

APPLICATIONS

BASIC

APPLICATIONS

(continued)

HEBREW TYPEWRITER (66) This program converts your 99/4A from english to hebrew. A great tool for religious studies. Can be combined with a screen dump program to print out the text from the screen. A great way to learn how to do the same with other languages. To get you in the mood, we also included a music/graphics program of "Fiddler" on this disk!

ARTIFICIAL INTELLIGENCE (40) This disk includes the famous computer program "Eliza" where the computer responds to your problems and questions in a manner that is almost human. Save a bundle on what you would pay a shrink for the same services. Also includes one of the better biorhythm programs so you can really take control of your emotional problems at one sitting.

LOTTO SELECTOR (8) This program selects numbers for use in the various state lotto games and even runs a simulated lotto game. Unprotected so it is easily modified for additional games.

ASTROLOGY (22) This program is as good as the coin operated machines. Tell it your birthday and see a great color display on your zodiac sign and see historical data on what took place in history on your birthday. Great for parties or even a charity event. Many famous people rely on this information!



TI PROGRAMS FROM AROUND THE WORLD

LAPD COOKBOOK (37) A complete computer collection of great recipes compiled by an LA cop who is also a gourmet chef. Whenever he went to a top eating place he would hit the chef up for a recipe. 2 disk sides completely menu selectable.

ORIGINAL TI SALES DEMO (5) This disk given to TI dealers by TI back in 1980, includes demonstration programs with graphics, speech, PRK, TB-1, and even includes the famous game TI-TREK which we reprogrammed to run on the TB-II module instead of the discontinued Speech Editor.

UTILITIES

HACKER CRACKER (53) A collection of the top disk copy programs including the best of the track copiers. One or more of these programs will copy almost all protected disks. Both TI & CorComp compatible programs are included. 2 disk drives are required on most of these programs.

SCREEN DUMP (55) This program allows you to printout what you see on the screen while running a disk, cassette or module program. Instructions included. Requires a Star or Epson compatible printer.

DUMPIT (3) This disk lets you copy a number of TI modules to disk. Editor Assembler module and Widget (cartridge expander) recommended for best results. Some programming knowledge will be helpful!

TI DIAGNOSTICS (19) This program released by TI loads into the TI Mini Memory module and then lets you test your system. Better than diagnostics on a disk since if your disk system was not working properly, you would not be able to use it. Complete with all Documentation on a second disk side.

DISK MANAGER II (62) This is the TI Disk Manager II module on disk. Now if your module goes, you are protected. Sold as a backup to owners of the module. Loads with exbasic.

LOADERS & CATALOGERS (28) A collection of the best catalog and menu/loader programs we have seen. Ready to be put on your own program disks.

PROGRAMMING AIDS & UTILITIES (35) This disk contains a collection of handy files including a group of title displays and a super cross reference program. Also included is a great disk management utility that you will use over and over!

TI WRITER/MULTIPLAN UPGRADE (19) This disk released by TI adds real lower case to your TI writer and more. Also speeds up Multiplan.

TI FORTH DEMO (17) This disk released by TI demonstrates the power of the programming language Forth for music and graphics. Requires 32K and Editor Assembler Module.

FUNNELVEE FARM UTILITY (42) This program from down under puts many of the most often used application and utility programs at your fingertips. Complete with documentation on two disk sides.

BONUS

FREE DELUXE DISK STORAGE CASE WITH EACH ORDER OF FOUR OR MORE DEMO DISKS!!



A NOTE ABOUT DEMO DISKS: TEX-COMP's demo disks are a collection of disks containing unique and entertaining features which we believe will help you get more out of your TI-99/4A. Some if not all of them are in the public domain. However, in certain cases, the author requests a contribution if you use and enjoy it. While you are not legally obligated to do so, we at TEX-COMP encourage your assisting these talented programmers if you enjoy their work. That is why we offer these disks at such a low price.

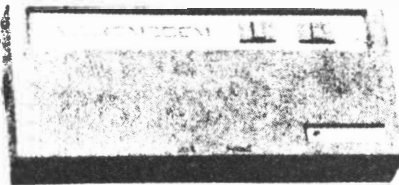
VOLKSMODEM The Complete Low-Cost Plug-In Modem.

It puts computer-to-computer communications within easy reach of every personal computer owner.

Just plug Volksmodem between any wall phone jack and telephone and put your computer into instant communication with thousands of others. It's that easy. No extra parts or tools are necessary—just one adapter cable and software is all that's needed.

MONEY SAVING SPECIAL. Get the Volksmodem (reg. \$59.95), 99/4A modem cable (reg. \$12.95), and Terminal Emulator II (reg. \$9.95) an \$80+ value for ONLY \$39.95.

— New Low Price on 1200 Baud — only \$99.95



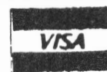
Send order and make checks payable to:

TEX-COMP

PO Box 33004, Granada Hills, CA 91344



AUTHORIZED DEALER



VISA and MASTERCARD
HOLDERS CALL DIRECT
(818) 366-6631
24 Hour Order Line

TERMS: All prices FOB Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 Minimum). East of Mississippi 4 1/2%. Add 3% for credit card orders. Prices and availability subject to change without notice. We reserve the right to limit quantities.

NOTE: Payment in full must accompany all orders—credit card, company check or money order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6 1/2% sales tax.

TEX+COMP

SINCE 1980

THE OLDEST AND MOST RESPECTED NAME IN TI-99/4A



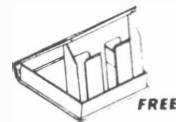
FREEWARE DISKS

Public Domain and Shareware Programs
Are Available from our Library, and Priced at

**EXCITING NEW WAYS
TO USE YOUR TI-99/4A COMPUTER**

Only
\$4⁹⁵
each

LATEST FREWARE RELEASES



BONUS

FREE DELUXE DISK STORAGE
CASE WITH EACH ORDER OF
FOUR OR MORE DISKS!!

ORDERS SHIPPED OUT SAME OR NEXT DAY

series VI

Fantastic Software Great games, educational programs,
and much more.

#70. RUNNER II

If you liked Star Runner and TI Runner, you will love this latest and greatest running game from France. Great screens, graphics and excitement.

#71. KIDS LEARNING II

Another two disk sides filled with the best educational programs and games ever created for the computer. Fantastic graphics and color to make learning fun.

#72. CERBERUS

A fantastic space game from Germany where you have to pilot your space ship through narrow and crooked channels in space without colliding. Great graphics, selectable ship speed and music add up to one of the best we have seen. If you thing re-fueling in Parsec was tough, you haven't seen anything!

#73. CRYPTO (gram)

If you like word games this is one of the best. Set up like a TV game show with great screen displays and an exciting game for all ages!

#74. LABEL MAKER II

This label program makes labels to affix to gifts and presents. You compose the text and add graphics from a selection to fit the occasion.

Send order and make checks payable to

TEX-COMP

P.O. Box 33064, Granada Hills, CA 91344



AUTHORIZED DEALER

TERMS: All prices FOB Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 Minimum). East of Mississippi 4 1/2%. Add 3% for credit card orders. Prices and availability subject to change without notice. We reserve the right to limit quantities.

#75. DISK CATALOGER

This fantastic program by Marty Kroll takes your disks and creates a library disk where you can tell what you have in your program library. Files, sorts, prints and easy to use! Now is the time to get organized and this program does it for you.

#76. PROGRAMMING AIDS & UTILITIES II

A collection of aids and utilities that will be useful to everyone who uses a 99/4A. UTIL3 is a utility to convert disk and cassette programs in TI Basic to TI Extended Basic. Now you don't have to worry about the wrong calls etc. Another utility from Australia, "Merge", allows you to combine two programs. For example, two cassette programs can be made out of one that is too large to load separately. In addition, two great diagnostic utilities are included that allow you to test your keyboard and processor and see the response right on the screen.

#77. MICROdex99

This is a database program by database expert Bill Gaskill. It allows you to file away information from magazines, for example, and access it at will. Similar in concept to our disk #21 but operates completely different. A must for those interested in database management and computer filing systems.



VISA and MASTERCARD
HOLDERS CALL DIRECT
(818) 366-6631
24 Hour Order Line

NOTE: Payment in full must accompany all orders—credit card, company check or money order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6 1/2% sales tax.

TEX+COMP

SINCE 1980

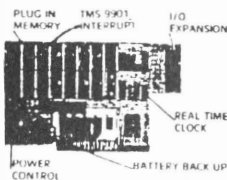
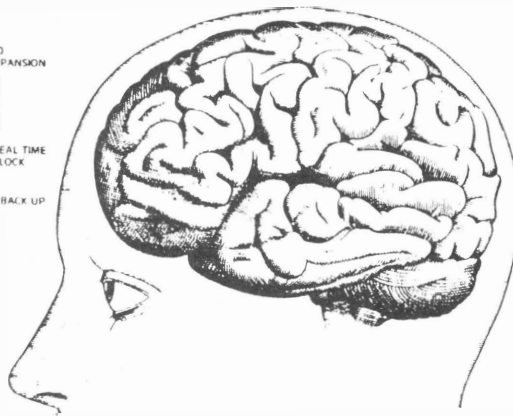
THE OLDEST AND MOST RESPECTED NAME IN TI-99/4A

**FREEWARE
DISKS****ORDERS SHIPPED OUT SAME OR NEXT DAY****#78. ARTCON BY RAY KAZMER****ATTENTION ALL YOU USERS OF
GRAPHX & TI ARTIST!!!**

This all new utility by the master of TI Graphics lets you you convert EXBASIC graphics including sprites to TI Artist Pictures or to Graphx pictures with a new MAX-RLE2 included. This is by far one of the most useful graphic utilities to come along. Ray has been good enough to put it in our free-ware library to ensure that it will receive maximum distribution. Thanks Ray!!!

#79 DM1000 V3.5

DM1000 is one of the most popular disk manager programs for the TI-99/4A. It originally started life as a Canadian copy of the Cor-Comp Disk Manager and has been improved by users all around the world. Ver. 3.5 is considered the most reliable version to date

**GRAND RAM**

**FINALLY, SOMEONE'S USING THIS
SCIENTIFIC TOOL TO SOLVE YOUR
TI PROBLEMS**

GRAND RAM SYSTEM EXPANSION

A NEW AND EXCITING OPTION FOR YOU AND YOUR TI 99/4A

Public Domain and Shareware Programs
Are Available from our Library, and Priced at

Only
\$4⁹⁵
each

BONUS

FREE DELUXE DISK STORAGE
CASE WITH EACH ORDER OF
FOUR OR MORE DISKS!!

series VII

and we have received permission from CorComp to distribute it as freeware. It is far superior to the TI Disk Manager II and supports all formats.

#80. BIRDWELL DISK UTILITY

This disk utility is a must if you are into programming and software development. It is not only an outstanding disk manager, it is much, much more. Anything you want to do with a disk this utility can most likely do. It has great routines for copying sectors, comparing one file with another and it is fully menu driven and easy to use. One of the best!

#81. HOME ACCOUNTING SYSTEM

A complete accounting system for home or small business including a checkbook manager, budget analysis, mailing list and inventory. Unprotected and easy to modify for specific applications.

**TEX-COMP OFFERS LOW DISCOUNT PRICING
ON ALL DATABIONICS PRODUCTS**

GRAND RAM FEATURES

- Print spooler keeps system active while printing
- Battery backed to eliminate data loss and power supply
- Optional real time clock
- Plug-in memory for easy expansion up to 512K
- Compatible with TI, Mvarc, Geneve, CorComp, Morning Star, Foundation
- I/O expansion for future products
- TMS 9901 on board interrupt to speed input/output
- Fully documented source code
- Accessible from any language
- Selectable disk drive configuration gives you up to 4 drives per Grand Ram
- Disk manager and terminal emulator software

GRAND RAM 64K...\$139.95**128K...\$167.95****256K...\$207.95****512K...\$299.95****GM REAL TIME CLOCK\$19.95**

SEND ORDERS TO:

TEX+COMP™

P.O. BOX 33084

GRANADA HILLS, CA. 91344



VISA and MASTERCARD
HOLDERS CALL DIRECT:
(818) 366-6631



add 3% for credit card orders

c99—

(Continued from Page 15)

The second dimension in the function must agree with the second dimension in your program. This can be done by typing this second dimension the same as in the program or by defining a variable (the second dimension) at the beginning. After you have assembled your file, load your object file, CSUP, and CFIO.

The functions `fprint()` and `fprintf()` can be used in the program in place of `puts()` and `fputs()`. In this case delete `#include DSK1.CONV` and add `extern atoi(), fprint(), fprintf();`. Include `PRINTF` and `FPRINTF` when you load your object program. The argument `&t[0]` can be replaced by `t` in the sort function.

Now is a good time to show some of the advantages of pointers. If pointers were not available, separate functions might be necessary to copy the *i*th character string in a two-dimensional array to a character string (a one dimensional array), the *i*th character string in a two-dimensional array to the *k*th character string in a two-dimensional array, a character string to the *i*th character string in a two-dimensional array. One of these three functions might be written as:

```
/*COPY FROM 2-DIM TO 1-DIM ARRAY*/
dblsg(t,s,i) /*copy s into t*/
char s[][dim],t[];
int i;
{
    int j;
    j=0;
    while(t[j]=s[i][j])
        ++j;
    return;
}
```

This function can be rewritten using pointers, as:

```
dblsg(t,s,i)
int i;
char s[][dim];
char *t;
{
    char *p;
    p=&s[i][0];
    while(*t++=*p++)
```

```
;
return;
}
```

Change the heading to `strcpy(t,s)`, omit `int i;`, change `char s[][dim];` to `char s;`, omit `char *p;`, omit `p=&s[i][0];`, and change `*p` to `*s`. Now, look back to the copy function, `strcpy()`, earlier in the article. You should recognize that you now have turned the above function into `strcpy()`. The initial pointer values are supplied by the arguments, which can be a character string in a one- or two-dimensional array.

Write two functions using arrays to copy the *i*th character string in an array to the *k*th character string in an array and to copy a character string to the *i*th character string in an array. By the same reasoning and changes you will find that you will end up with the same function, `strcpy()`.

In the same way, the compare function, `strcmp()`, might take the place of two functions.

A change should be made in the function `ax()` included in the function library MATH;C (later changed to ALG) in previous c99 articles. The following else block should have been written first in the list of else blocks:

```
else if (fcom(x,"=",zero)
        fcpy(wone,r);
```

If this isn't one of Murphy's Laws, it should be: "No matter how many times a person proofreads a manuscript, there will always be one more mistake!"

It has been mentioned that it would be a good idea if programs could be available on disk. I really had not intended doing this for I have always considered typing a program part of the learning process. If anyone wants copies of my programs and/or functions on disk I will be glad to make the copies. Two disks are available — one with uncompiled c99 programs and function libraries and the other with ready-to-run programs using E/A option 5. The copies will be SS/SD. If you want only one disk copied, be sure you let me know which one. Please send formatted disk(s) in a mailer with a self-addressed label, return postage and \$5 for each one that you would like to have copied. Address to P.O. Box 1241, Clemson, SC 29633.

Swedish user offers BASIC CALLs

This comes from our British correspondent Stephen Shaw. He writes:

Way back in the golden days of yore, 99er Magazine published one article on the extra CALLs available to TI BASIC when either the Personal Record Keeping or Statistics modules were in the module slot. The article dealt with CALL A and CALL D, which were equivalent to ACCEPT AT and DISPLAY AT.

Subsequent user group newsletters covered CALLs such as CALL P, CALL G, CALL H, CALL L and CALL S.

Now, we have *all* the CALLs available to us courtesy of Jan Alexandersson.

Jan has prepared a disk which contains documentation to help with all the CALLs, plus the PRK module in the form of a BASIC program. (Remember those rumors that it was written in BASIC — now you can see the listing.) As the program is some 20K, it cannot be run in TI BASIC, but it can be listed in Extended BASIC. He has also separated out the various parts of it into MERGE files, which can be used in BASIC programs after loading in XB and

resaving.

The extra CALLs are interesting as they have names which use single characters with low ASCII values. While CALL A is the same as CALL [65], these newly documented CALLs in the neighborhood of CALL [5]. If your keyboard can't produce them, there's also the MERGE files, or you could use a sector editor.

To obtain the disk, send at least \$5 (U.S.) for the disk to Jan Alexandersson; Springarvagen 5, 3TR; S-14261, Trangsung; Sweden.

Tutorial: Configuring Funnelweb

By **JIM SWEDLOW**

These instructions supplement the Funnelweb Versions documentation. This release supports Versions 4.10 (May 30, 1988), 4.11 (July 4, 1988) and 4.12 (Aug. 12, 1988).

These instructions assume that you will operate Funnelweb from Drive 1. If you will use another drive, you will need to modify them accordingly.

They also assume a basic system and normal use. If you have special features or uses, you should be able to modify them to meet your needs.

If you need to press a key or keys, the "<>" signs will be used (for example, "Press <ENTER>"). When two keys must be pressed together, it will shown this way: "Press <CTRL^C>". <CTRL^C> means hold the <CTRL> key down with one finger and then press <C> with another. Release both fingers simultaneously.

In boxes where you input information (a file name, etc), indicate that you are done by pressing <ENTER>. When this is necessary, it will be shown this way: "Enter the correct file name."

In Configure menus, you normally choose options by pressing the first letter. For example, the Top Menu has three choices: Sysinfo, Quit and Install.

Press <S> for Sysinfo, <Q> to Quit and <I> to install. Such choices will be shown as "Press <Q>uit" or "Press <Q> to Quit."

A menu layout of all Configure Menus follows these instructions.

<CTRL^C> is used to move from the current menu to the pervious menu. You can use <BACK> or <FCTN^9> instead of <CTRL^C>.

A number of times these instructions ask you to press <CTRL^C> to return to a previous menu. Sometimes it will be necessary to press <CTRL^C> more than once.

<CTRL^C> also now works in DM 1000 instead of <BACK>.

In many places in the Configuration Program, pressing <?> or <FCTN^I> windows in help screens. These screens are filled with useful information. You should check them frequently the first time you configure Funnelweb.

Also available in most places in the Configuration Program is the Quick Directory. Press <FCTN^7> to access the disk directory function.

Abbreviations

FWb Funnelweb
XB Extended BASIC
EA Editor Assembler
TI Wr TI-Writer

STARTING UP

Make a working FWb disk. Use DM 1000 to copy the files you will need to a freshly initialized disk. A list of files and some suggested arrangements follow these instructions. Configure only your working copy. Keep an unmodified master copy "just in case."

Load FWb with your working FWb disk in Drive 1. If you are using XB, FWb will autoboot when you choose Extended Basic. If you are using the EA module, choose "5. Run program File" and then press <ENTER>.

If you loaded from XB, choose Configure from the XB Menu. If you loaded from EA, choose User List from the EA Menu and then choose Configure. If Configure is not on either menu, you can load it through the LOADERS function. Choose option 2. The file name is DSK1.CF.

FUNNELWEB MENU LAYOUT

TOP MENU

Sysinfo
Quit---> Exits Configuration Program
Install

INSTALL MENU

LOAD XB/XBII
FW/UTIL1 Others

SYSINFO MENU

Load---> Loads SYSCON file
Edit

Save---> Saves edited SYSCON file
SYSINFO EDIT MENU

Loading

Devices

Colors

Menu

XB List

UL List

TOP MENU

Press any key to get past the opening screen.

Press <S> to modify the system infor-

mation (Sysinfo).

SYSINFO MENU

Press <L> to load the system configuration file. Enter the file name (DSK1.SYSCON). You can have multiple configuration files with any names you choose. To implement one, you must activate the Configuration Program, load the configuration file and then install it (see step 12).

Press <E> to edit the system configuration.

LOADING

Press <L> to access the Loading Menu.

Boot Tracking should be ON if you are loading from a disk drive. RAM disk users should turn it OFF as FWb cannot track booting in RAM disks. Press to toggle Boot Tracking ON or OFF.

The number following "TI Writer side" is the drive number where the files that support the choices on the TI Writer Menu will be found. This number is used if Boot Tracking is OFF or if it fails.

The same applies to "Edit/Assm side". Normally both are 1. To change them, press <T> or <E> and then enter the drive number.

"Working Drive" is the drive number of the drive in which you will put your data disk. If you have a two drive system, this will normally be 2. Press <W> to change the Working Drive.

If "UL Immediate" is ON, the User List will be the first menu you will see when you load thru EA. Unless you want to access the UL immediately, you will normally want this off. Press <U> to toggle this ON and OFF.

Turning this ON allows you to load FWb from EA and have a menu that you designed completely appear first. This feature was added with Version 4.11.

When all values are correct, press <CTRL^C> to return to the main Edit Menu.

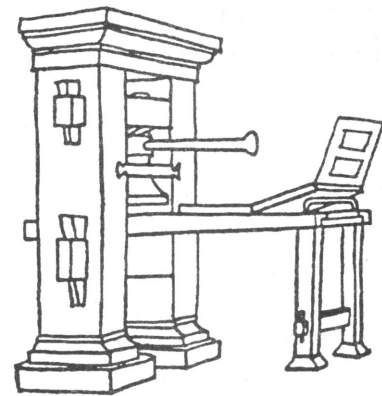
DEVICES

Press <D> to access the Devices Menu.

Press <E> for the Editor Printer. If you have a parallel printer, enter "PIO". If you have a serial printer, make sure that all the switches are correct.

(See Page 24)

PRESSTM RELEASE



Every now and then a program comes along that redefines the way you work and play with your computer. You can literally count such programs on two hands - yet they are so useful and so revolutionary that you don't know how you ever got along without them. Where would graphics be without *TI-Artist* and *GRAPHX*, spreadsheets without *Multiplan*, terminal emulators without *Telco*, disk managing without *DM1000* or databases without *TI-Base* or *PR-Base*? Asgard Software is pleased to introduce the newest addition to this select group. We are pleased to introduce a program that will change the way you write letters, reports, newsletters and even books. We are pleased to introduce something that will soon come to define "word processing" on the TI-99/4A and Myarc Geneve 9640 - the program to which all others will be compared.

Press Is the result of over a man-year of development by Charles Earl (author of *Telco*), Ruth O'Neill, Chris Bobbitt and dozens of others who have helped to define, implement and test the next-generation word processor for the 99/4A. Starting from scratch, we examined the best word processors on PCs and other computers, and created a new word processor for the 4A that combined the best features of those other programs with the unique capabilities of the 99/4A. The resulting program is as powerful and as professional as programs for the Apple Macintosh or IBM PC compatibles costing \$300, and even \$600. We also designed a program that would take advantage of whatever hardware you have, including super-carts, RAM-disks, hard-drives and 80-column displays, yet it will run perfectly well on a basic TI-99/4A with 32K and a single drive.

Press has hundreds of features - including hundreds available in no other word processor for the TI-99/4A or its compatibles. You can easily do things in *Press* that are difficult or impossible in *TI-Writer* or enhancements of it such as *MY-Word*. Some of the major features are:

- The program will allow you to set a page width of up to 256 columns, and define one or more newspaper-style "columns" on the page, each with its own width. To format the text in columns simply tell the program the page width, the number of columns on it, and start typing. At the end of one column it will automatically send you to the top of the next.
- The program is entirely "what-you-see-is-what-you-get" (or WYSIWYG - pronounced "wiz-e-wig"). In other words, you'll see right-justification, centering, indentation, bold text, underline, italics, and other functions *on the screen*, as it will appear on the page. You don't need to learn a code language or read a printer manual to produce a great-looking page. There is no "formatter" in *Press* - all formatting is done on the screen as you type from options you select by pull-down menus or short-cut function key presses. Even page breaks are marked on the screen.
- Unlike any other editor for the TI-99/4A or Geneve, the length of your document is limited only by the amount of disk space available. You can easily create or edit 90K, 180K, or even 360K documents without breaking it up. If you have a hard-drive you can create a 1000-page book - all as a single document.
- A complete 100,000 word spelling checker is integrated into the program. To use it simply select a word, line or paragraph and tell it to check it. The program will tell you if there is a misspelling and the context it is in.
- The program supports the features of your printer - simply select your printer type from a list and your printers features will be available within your document - and on the screen.
- The program will accept a standard TI-Writer file - none of your documents have to be re-typed to be used in *Press*.
- The program has many more features than can be listed: block operations that include column manipulation, multi-line headers and footers, footnotes, "un-delete", a keyboard buffer so that you never lose characters while typing, mail-merge, and much more.

Press requires 32K, a disk drive, and either Extended BASIC or Editor/Assembler. It can utilize any 80-column card, most RAM-disks, an 8K or 32K Supercart, a hard-disk drive, any number of floppy drives, replacement keyboards, GRAM devices, and virtually any printer. It includes an extensive manual in a professional binder and a limited-subscription to a user magazine, *Press Report*.

Send: \$59.95 plus \$3.00 S&H	Asgard Software
	P.O. Box 10306
	Rockville, MD 20850
	(301)559-2429

Major Credit Cards Accepted. Office hours 8:00AM-5:00PM EST M-W, 6:00-12:00PM Th-Fri, 10:00AM-6:00PM Sat-Sun

FUNNELWEB—

(Continued from Page 21)

Press <F> for the Formatter Printer. If you have a parallel printer, enter "PIO.LF". If you have a serial printer, make sure that all the switches are correct and that the printer name includes ".LF".

The Object, Work and Program file names are defaults for various FWb functions. If you enter a name, include the drive designator (for example, DSK1.LOADFILE). If you leave the field blank, the drive number you designated as the "Working Drive" in the Loading Menu will appear (for example, if you designated the working drive as 2, it will be "DSK2.'). If you want the default to be a different drive than the working drive, you can enter "DSKn.'). Any file name you tag in the Quick Directory will override these default names.

Press <O> to update the Object File. This is the default file name when an object (DF/80) EA file is required (for example, when loading an object file).

Press <W> to update the Work File name. If you put a name here, it will be the default when you use LoadFile in the Editor.

Press <P> to update the Program file. This is the default when loading EA Program files (TI Pgm, GPL Pgm, E/A Pgm, etc).

When all values are correct, press <CTRL^C> to return to the main Edit Menu.

COLORS

Press <C> to access the Colors Menu.

The cursor will be on the first color choice. This is the screen colors that will appear when FWb boots. The other colors are those that cycle when you press <CTRL^3> in the Editor or 0 (zero) on most screens that invite selection by number.

You have several choices from this point:

<E>dit: modify the current color

<N>ext: move to the next color on the list

ack: move to the previous color on the list

<X>chg: exchange two sets of colors

<R>edo: restore the colors to what they were when you started

<V>iew: the current color

When all colors are correct, press

<CTRL^C> to return to the main Edit Menu.

MENU

Press <M> to edit the choices on the main TI Writer and EA Menus.

Press <T> to edit the choices on the TI Writer Menu and <E> for the Editor Assembler Menu. You can change items 4 through 7 on both Menus.

For each line on the Menu, you have these options: <E>dit, <N>ext, ack and <R>edo. These are the

same as in Colors.

If you <E>dit a Menu line, you will be required to enter the following information.

NAME: This is the name that will appear on the Menu. This can be anything you want up to 10 characters.

FILE NAME: This is entered just to the right of the Menu name and must be only two characters. This is the file name that will be loaded when you opt for that Menu

(See Page 25)

FUNNELWEB MENUS

LOADING MENU

Boot Tracking ON
TI Writer side 1
Edit/Assm side 1
Working Drive2
UL ImmediateOFF

MENU MENU

TI Writer side
Edit/Assm side

Edit Choices:

Name
File name
Type:TIW Pgm
GPL Pgm
E/A Pgm
Script
Low Mem
Ld/Run

USER LIST MENU

Edit entries
Fetch list
Make reserve
Xchg Buffers
Save UL file

The User List Edit Menu is the same as the XB Edit Menu except that XB Pgrm and XB Retn are not available.

DEVICES MENU

Edtr Printer
Fmtr Printer
Object File
Work File
Program

XB LIST MENU

Edit entries
Fetch list
Make reserve
Xchg buffers

Edit Menu

Edit
Next
Back
Redo

Edit Choices

Name
Boot Tracking
ON/OFF
Secondary NO/YES
Reminder NO/YES
Filename
DSKn.NNNN
Type:TIW Pgm
GPL Pgm
E/A Pgm
Script
Low Mem
L/R A/M
XB Pgrm
XB Retn

COLORS MENU

Edit
Next
Back
Xchg
Redo
View

FUNNELWEB—

(Continued from Page 24)

choice. You cannot enter "DSKn." FWb gets the drive number from Boot Tracking or the Loading information.

TYPE: Here you tell FWb the file type. Move the light bar between the options by pressing <N>ext and ack. You have the following choices:

TIW PGM: Emulates option 3 from the TI Writer Menu. The file must be in EA Program format.

GPL PGM: This is used for most programs loaded by the EA "Run Program File" option.

E/A PGM: This is for EA "Run Program Files" that need EA Utilities. In general, use "E/A Pgm" if "GPL Pgm" doesn't work.

SCRIPT: This allows you to write a script for loading a series of object (DF 80) EA files. See FWDOC/UTIL for details.

LOW MEM: Loads object (DF 80) files into low memory. See FWDOC/UTIL for details.

LD/RUN: Use this for most "Load and Run" object (DF 80) EA files.

When you are satisfied with the TI Writer and EA Menus, press <CTRL^C> to return to the main Edit Menu.

XB LIST

Press <X> to modify the Menu that appears after you load FWb from XB. The first three choices ("TI Writer", "Edit/Assm" and "XB Return") cannot be modified.

You now have four choices:

<E>DIT: Use this option to Edit the current entries (that is, the XB List in the SYSCON file).

<F>ETCH LIST: Use this option to obtain the menu in the LOAD program. Normally this is the same as what is in the SYSCON file.

<M>AKE RESERVE: If you <F>etch a list, press <M> to make it the reserve list. Then if you later press <R>edo, this is the list that will be restored.

<X>CHG BUFFERS: Restores the previous "reserved" list.

During initial configuration, you should

press <E>dit.

<E>dit will show you the choices in the XB Menu. You have the normal keys active for moving from item to item: <E>dit, <N>ext, ack and <R>edo.

If you choose to <E>dit an entry, you will be required to enter the following information:

NAME: This is the name that will appear on the Menu. This can be anything you want up to 10 characters.

BOOT TRACKING ON/OFF: Keep Boot Tracking ON if the disk with the file will be in the drive from which you loaded FWb. Turn it OFF if it will be in another drive. Boot Tracking does not work with RAM disks.

SECONDARY NO/YES: If the drive for this file is different than the boot drive and if you answer YES to this question, FWb will look for the user file in the drive specified.

REMINDER NO/YES: If this is YES, FWb will remind you to insert the disk (See Page 26)

TI BASE

The Ultimate TI-99/4a Database

Sure... average databases let you store your "valuable" information. They may even let you retrieve, sort, and print that information on command. But let's face it, most other databases don't take into account that your "valuable" information may include something other than a mailing list. However, TI BASE is anything but your average database.

TI BASE lets you design your own database; it literally puts you in the driver's seat. With it you can define how many active database files are to be used (up to five); each database file can consist of 16129 records, with 17 fields per record, and 255 characters per field. That's big, **real big!**

Unlike any other TI-99/4a database, TI BASE utilizes a powerful command language that allows you to access your own custom databases on-the-fly, or create powerful command (program) files, for automatic and complex data processing. That's smarts, **real smarts!**

So why not treat yourself to something that's above average? For only \$24.95 (plus \$2.50 shipping) you get the TI BASE system disk, tutorial disk, keyboard overlay, and a comprehensive user manual. TI BASE requires a disk system, 32K, and either an Extended Basic, Editor/Assembler, or Mini Memory cartridge

TEXAMENTS

Office: (516)345-2134

244 Mill Road, Yaphank, New York 11980

BBS: (516)475-6463

Please add the following shipping charges to your order: \$2.50 for domestic first class delivery, \$8.00 for foreign air mail (insured) delivery. Orders are usually shipped within a 48 hour period. All C.O.D. orders must be placed by phone. No credit card orders will be accepted. Prices, specifications, and availability are subject to change without notice. Dealer and User Group inquiries are invited. Contact our office for more details and special offers.

FUNNELWEB—

(Continued from Page 25)

with the file. If it is NO, FWb will read the file immediately. Make this YES if the disk with the file will NOT be in the named drive when you invoke this Menu choice.

FILENAME: The name of the file that FWb should load. Include "DSKn." in the file name.

TYPE: Here you tell FWb the file type. Move between options with <N>ext and ack. You cannot leave this field as a blank. You have the choices listed above, and:

XB PRGM: This is a standard XB Program.

XB RETN: This returns you to the XB "ready" screen. It works like the NEW command.

When you are satisfied with the XB Menus, press <CTRL^C> to return to the main Edit Menu.

UL LIST

Press <U> to edit the User Lists.

There are at least two User Lists to edit. The first one is called "UL" and is the user list that comes up when you press "8. User List" on the EA Menu.

The other one is the Disk Utilities choice in the TI Writer Menu ("3. Disk Util"). The file name is DS.

You can chain User Lists. The main User List can call another User List by making User List a choice on the User List. FWb convention is to call subsequent User Lists UM, UN, etc.

From the main User List Menu you have the following choices:

<E>dit Entries
<F>etch List
<M>ake Reserve
<X>chg Buffers
<S>ave UL File

The following instructions should be followed for each User List. At a minimum, you should modify UL and DS.

Press <F> to fetch the User List. Enter the correct file name (DSK1.UL, DSK1.DS, etc).

Press <M> to make the fetched User List the reserve.

Press <E> to edit the user list. Editing is the same as editing the XB Menu (step 9e) except that the file types "XB Program" and "XB Return" are not available.

Press <CTRL^C> to return to the main User List Menu.

Press <S> to save the User List. Use the correct file name (DSK1.UL, DSK1.DS, etc).

<L>oad, <E>dit and <S>ave any other User Lists you will be using. Each User List is saved under a separate file name — revising one does not affect another.

When you are done editing User Lists, press <CTRL^C> to return to the Edit Menu.

Edit Menu — Saving the SYSCON file

Press <CTRL^C> to return to the Sysinfo Menu.

Press <S> to save the SYSCON file. Enter the file name (DSK1.SYSCON or whatever name you choose to use).

Press <CTRL^C> to return to the Top Menu.

INSTALL MENU

Press <I> to invoke the Install Menu.

Press <L> for "LOAD XB/XBII".

The file name should be DSK1.LOAD. Change it if necessary.

Press <ENTER> to load the Source File.

When prompted, press <ENTER> to save the Target File.

Press <CTRL^C> to return to the Top Menu.

FINAL STEPS

Press <Q> to Quit.

Exit FWb and then reload it. The changes you have made will not appear until you reload the program.

(See Page 28)

FUNNELWEB FILES

File	Purpose	SSSD Disk	DSSD Disk	Note
-READ-ME	Docs File			
AS/AT	Assembler			1
&C99PFI;O	c99 Utility			2
CF/CG	Configuration Pgm		D	
CHARA1	TI Wr Characters	S	D	
&CHARA2	EA Characters			1
CP	c99 Loader			2
CT8RAM	Cartridge RAM Loader			2
&DP	Disk Patch	S	D	
DS	Disk Utilities	S	D	
EA	EA Loaders	S	D	
&ED/EE	TI Wr Editor	S	D	
FMSAVE	Save Utility			1
FO/FP	TI Wr Formatter	S	D	
&FWDOC/EASM	Docs File			
FWDOC/LOAD	Docs File			
FWDOC/REPT	Docs File			
&FWDOC/TIWR	Docs File			
FWDOC/UTIL	Docs File			
FWSAVE	Save Utility			1
&LDFW	Aux Load Program			3
LH	Line Hunter			1
LL	Low Mem Loader		D	
&LOAD	XB Load Program	S	D	
MG/MH	DM 1000	S	D	
QD	Quick Directory	S	D	
&SAVIT	Sample Script File		D	
SL	Script Loader		D	
SYSCON	System Configuration	S	D	
&UL	User List	S	D	
UTIL1	Loads FWb from EA	S	D	
XB4THLD	Forth Loader			2

1. These files are normally used only for Assembly programming.

2. Used with named programs. See FWDOC/UTIL for details. Include only if needed.

3. LDFW can be used to load FWb from BASIC in EA, XB II or Mini-Memory. See FWDOC/UTIL for details.

JUMBOOT V 2.0 JUMBOOT V 2.0

*** JUST RELEASED ***

- Fast-Load MDOS on Corcomp, TI and Myarc disk controllers.
- Available in 5.25 and 3.5" single and double density versions.
- Frees 90K of expensive RAM on your Geneve and Horizon RAMdisk.
- Supports 80 track Quad disk controllers from Myarc.
- Accomodates the timing difference of Geneve EPROMS.
- Additional file space on DS drives and DD controllers.
- Increases loading speed for programs loaded under MDOS or GPL.
- Permits painless cold booting for program developers.
- Includes a RECOVER utility. Permits fast-load restoration under many conditions.
- Contains a Fairware copy, of MCOPY, by Mike Dodd, on the 40 track and MCOPY/JB2 on the 80 track Jumpboot. Fairware cost NOT included in price of Jumpboot.



PERFORMANCE COMPARISON



9640 FILES	STANDARD DISKS(a)	JUMBOOT 1.0 TI CC MY	JUMBOOT 2.0 TI CC MY	HORIZON RAMDISK
MDOS 358 Sectors	34	8-15(c) 9	4.5 9 4.5 4.5	1
GPL/GPP 124 Sectors	19	14 12 12	11.5 9.5 8-9.5(b)	3

Nominal read times in seconds. - (a) MDOS 9 sector/track single density
(b) 8.0 sec on 80 track version - (c) 8 sec on G0.97, 15 sec on G0.98 EPROM

RAVE REVIEWS

- "I've really been enjoying your Jumpboot disk, really a life saver when debugging errant MDOS programs which crash the system."
-- Al Beard, LGMA Products Author 99Fortran
- "I was previously booting from a Horizon RAMdisk, but after seeing the speed the Jumpboot gave, I permanently moved SYSTEM/SYS out of my RAMdisk. It was a delight to free up 358 sectors on the RAMdisk for other files."
-- Walt Howe, Author, March 1988 MICROpendium

*** ORDER NOW ***

	Jumpboot 2.0 - 5.25 Single or Double Density	\$15.95	
	Jumpboot 2.0 - 5.25 80 track, Quad Density	\$18.95	
	Jumpboot 2.0 - 3.5 80 Track, Quad Density	\$19.95	
	Jumpboot 1.0 - 5.25 SSSD only	\$15.95	

DISK ONLY SOFTWARE
P.O. BOX 244
LORTON, VA 22079

ADD \$2.00 SHIPPING, U.S. AND CANADA - \$4.00 AIRMAIL OVERSEAS DELIVERY
TOLL FREE CREDIT CARD ORDERS - 1-800-456-9272 - VISA, MASTERCARD AND AMEX

*** TI NET TI NET TI NET ***

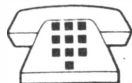
JOIN THE BEST
TI 99/4A - MYARC 9640
TECHNICAL SIG AVAILABLE

Online product support from MYARC. Direct, NOT third hand!
Direct online product support from:
Paul Charlton, Peter Hoddie, Mike Dodd, Al Beard, Jerry Coffey and more
TI/9640 Shopping Area - FREE Classified Ads - Interactive Polling Area
ONE standard connect charge - EXTRA FREE time on uploads - Advantage Plan
Delphi supports up to 2400 baud for the same LOW price
\$7.20/hr non-prime time - \$4.80/hr Advantage Plan rates
Canadian Users - Same rates as U.S., thru direct dial Tymnet Canada

ONLINE SIGN UP OFFER

Includes a 480 page Delphi User Manual - Lifetime membership
PLUS one FREE hour of non-prime time - all for the LOW price of \$19.95

CALL TODAY



DIAL: 1-800-365-4636 or 617-576-2981 - Press RETURN twice
at PASSWORD, type TISPECIAL and RETURN
Direct dial from Canada only, at USERNAME type JOINDELPHI and RETURN
call 1-800-544-4005 or 617-491-3393 for Delphi node nearest you.



DELPHI: GENERAL VIDEOTEX CORPORATION
3 BLACKSTONE ST., CAMBRIDGE, MA 02139

TI NET
P.O. BOX 244, LORTON, VA 22079

What's on line?

The networks aren't ignoring TI, Geneve users

By JOHN KOLOEN

So, your disk drive is on the fritz. What do you do?

First off, you need information. Where do you turn? A recent edition of a good encyclopedia can help if you want general information about how a disk drive works. But it won't tell you how to fix one or diagnose a problem.

You can buy a technical volume on disk drives, but without a technical background you may not be able to understand it. Who do you turn to then? A technician? Certainly, he can help. But it will cost big bucks.

How about other hobbyists? Good idea. The only problem is that there may not be any fellow hobbyists in town to turn to. What then?

If you're like thousands of TI users, you'll let your fingers do the walking and your modem do the talking.

Electronic bulletin boards provide an array of possibilities for computer hobbyists that doesn't exist anywhere else. A BBS is a combination meeting place, software

store and information service that provides instant access to thousands of other hobbyists 24 hours a day. Have a question, post it on a BBS and within hours you may receive more answers than you'd have found in all the computer books at the library.

There are thousands of electronic bulletin boards across the country, ranging from single-purpose boards with limited access hours operating out of microcomputers to huge commercial ventures that use several mainframes and operate around the clock to serve tens of thousands of users. For the purposes of this article, we're going to focus on four commercial systems, each of which includes a Special Interest Group dedicated to the TI99/4A. These include CompuServe, Delphi, GENie and The Source.

(These electronic bulletin boards wouldn't be as valuable if users had to pay long distance phone charges to reach them, which is the case with the thousands of private electronic bulletin boards operated throughout the world. In most cases, in the continental U.S., the networks maintain local phone numbers in major cities throughout the country that subscribers use to go online. Thus, even though a network may have its mainframes in Maryland, users from California can access them with a local phone call.)

These major information services provide their subscribers with access to an array of options, ranging from stock quotes to wire service news to electronic shopping. For the purpose of this article, however, we're only going to consider their support for computer users via Special Interest Groups (SIGs).

Each of these services supports SIGs for a variety of computer brands. And any subscriber, regardless of his computer type, can access any of the SIGs. The modem bridges the chasm of incompatibility that exists between computer types.

While it can be amusing to check in on the activities conducted by other SIGs, TI users are likely to spend most of their online time tuned in to a TI SIG.

Each of the SIGs is operated by sysops (system operators). Frequently, a SIG will

have several sysops, whose job it is to take care of the SIG by maintaining the various databases that users may access, as well as answering questions from users. Generally, the busier the BBS, the busier are the sysops.

PRIME-TIME

It's not easy to determine which of the boards is the cheapest to use — much less which is the best value — although it's easy to tell that using Delphi, GENie or The Source during non-prime time hours is much less expensive than during prime time. Unlike the other three networks, CompuServe does not distinguish between prime and non-prime time and thus charges the same rate regardless of the time of day.

Prime time is generally normal weekday business hours, from 7 a.m. to 6 p.m. During this time, accessing the networks gets to be very expensive. This is because the networks want to keep the databases available to business users who are willing to pay premium prices to access information.

Non-prime-time hours are generally from 6 p.m. to 7 a.m., weekends and holidays.

However, the various networks offer other price breaks to subscribers. For example, Delphi charges \$7.20 per non-prime-time hour regardless of the baud rate, which comes out to 12 cents per minute. But for those who are willing to spend at least \$24 per month for online charges, Delphi has a special Advantage Plan which knocks the price down to only \$4.80 per hour (8 cents per minute).

Similarly, The Source has a special rate for TI SIG members while they are using the TI SIG portion of the board. Using TI SIG on The Source during prime time, for example, costs 23 cents per minute compared to the normal 43-cent per minute charge for non-SIG services during prime time.

Rather than go into more detail on charges, refer to the chart outlining the rate structure of the four services.

MESSAGE BASE

One of the hallmarks of a bulletin board is its message base. This is where most
(See Page 30)

FUNNELWEB—

(Continued from Page 26)

Check all Menu choices to make sure that they work and that they look the way you want them to. If you go back to Configure to change anything, you only need to change those items in question. After you have <S>aved the SYSCON file, you must <I>nstall the revisions into LOAD and UTIL1.

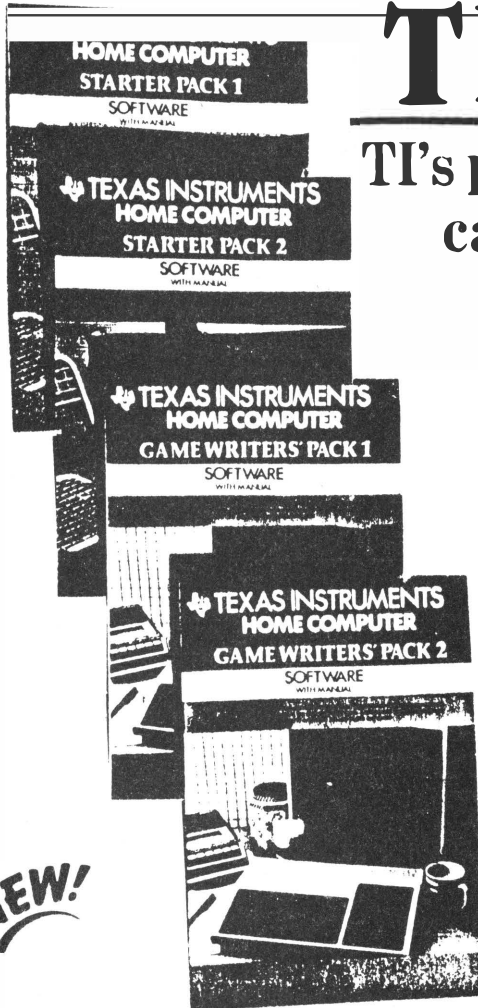
Load DM 1000. From the first screen, press <FCTN 3>. Make sure that the printer name is correct. If you change any information, answer <Y> to the save to disk question.

You are almost done. Make a back up copy of your configured FWb disk. If your working copy blows up, you won't have to go through all these steps to reconfigure it.

You now have three disks: the master, the working copy and the back-up working copy.

Now you are done.

HARNESS THE FULL POTENTIAL OF YOUR TI COMPUTER



NEW!

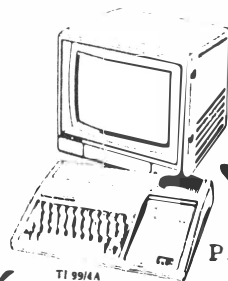
TI's programming and game packs can help you learn about programming, play exciting games — and save you \$\$\$

You can increase your programming ability and harness the full power of your TI-99/4A with this all new 4-part programming and game software that has never been available in the US or Canada.

All four "packs" are complete with a series of programs on disk or cassette that develop and graphically display the ideas covered in the accompanying 100 page manual.

The entire series contains over 20 programs and over 400 pages of all new programming and game design and writing instruction.

ONLY \$9⁹⁵ ALL 4 PACKS WITH
Cassette 4 MANUALS AND ALL
SOFTWARE



TEX+COMP™

TI USERS SUPPLY COMPANY

"YOUR LUBBOCK CONNECTION™"

P.O. BOX 33064, GRANADA HILLS, CA 91334

Please send the following:

___ 4-packs on disk \$12.95 ea.

___ 4-packs on cassette \$9.95

Add \$3.00 S&H (any quantity)
\$4.00 for Canada

Mr./Mrs./Ms. _____

Address _____

Ap t. _____

City _____

State _____

Zip _____

CHECK ONE: ☐ Payment Enclosed \$

Please Charge My: ☐ MasterCard

☐ VISA

CARD NO. _____

EXP. DATE _____

All prices have been discounted for cash,
add 3% for credit card orders.

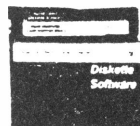
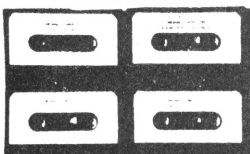
Visa and MasterCard Holders Order Direct

(818) 366-6631



**24 HOUR
ORDER
LINE**

ON CASSETTE OR DISK



OFFERED EXCLUSIVELY BY TEX-COMP

"...its worth the cost. You can't go wrong if you want to be a better programmer" ..Sept 88 MICROpendium

TEX-COMP has been appointed the exclusive North American distributor of this great 4 piece series from England and offers the entire 4 pack series at one low price.

TELECOMMUNICATIONS—

(Continued from Page 28)

messages are posted by users. It can be likened to a bulletin board in an office or school setting, where messages are constantly tacked up and taken down. However, on electronic bulletin boards, messages may be available for reading for years. Through the use of key words, for example, a user can call up every message posted between selected dates on a given topic.

What is exceptional about these electronic bulletin boards is the ability of the user to reach others with the same interest. As you would expect, messages on a TI SIG are likely to have something to do with

Now Shipping!
**Myarc Hard Disk
Controller Cards
Geneve 9640**

Hard drives — Power Supplies
Cables — Fully assembled units
We carry the full Myarc product
line. Call our office and make
your best deal.

Texaments
244 Mill Road
Yaphank, NY 11980
(516) 345-2134

SUPER EXTENDED BASIC OWNERS!
Have four modules in one with:
MULTI-MOD

The MULTI-MOD is a plug-in upgrade for owners of Triton's Super Extended BASIC module that gives you SEB, Editor/Assembler, Disk Manager III, and TI-Writer ALL IN THE SAME MODULE! It may be the only module you'll ever need!

The price of the upgrade kit is \$22.95 and includes a manual and disk with the Editor/Assembler and TI-Writer support files. A free brochure is available on request from:

John Gulon
11923 Quincy Lane
Dallas, TX 75230

Also ask about TI RS232 and Disk
Controller upgrade kits.

(Super Extended BASIC is a trademark
of Triton Products Company)

Telecommunications rates in U.S. and Canada

	CompuServe,	Delphi,	GENie,	Source
Prime Time	.10/.20/.20	.12/.12/.12	.58/.58/.58	.36/.43/.46
TI SIG Prime	NA	NA	NA	.18/.23/.25
Non-Prime	.10/.20/.20	.12/.12/.12	.08/.08/.20	.14/.18/.20
TI SIG non-prime	NA	NA	NA	.10/.13/.15
Advantage rate	NA	.08/.08/.08	NA	NA
Canada (non-prime)	—	.12/.12/.12	.15/.15/.15	.18/.22/.24
Method of payment	A,M,V	A,M,V	A,M,V	A,V,M,D

1. CompuServe rates for Alaska, Hawaii and Puerto Rico are 25, 23 and 18 cents/minute, respectively.
 2. Delphi rates for Alaska, Hawaii, Guam and Saipan are 17 cents/minute; 30 cents/minute from Puerto Rico.
 3. GENie rates include Alaska, Hawaii and Puerto Rico.
 4. First number is cost per minute at 300 baud, second number is cost at 1200, third number is cost at 2400 baud.
 5. Canadian funds
 6. A = American Express; V = Visa; M = MasterCard; D = Discover Card
- Above rates do not include long distance, surcharges or other fees that may be in effect depending on location of caller.

computing. Likewise, users who are interested in other subjects (photography, writing, etc.) can post messages on SIGs geared to those interests. However, computer SIGs are the most popular of the various SIGs.

The main bulletin board is where you'd post a message seeking the widest audience. (This is where you would probably ask for help in fixing your disk drive.) Most regular users will check in on the main bulletin board to stay current with what goes on on the BBS. But suppose you've got more specific interests. Say you're interested in Forth, or Myarc products, or assembly language programming. Then you'd tune in to the SIG data libraries that address these specific interests.

Each of the boards has a different selection of data libraries. In all cases, the data libraries are developed and supported by the users themselves. Without user interest, the data libraries wouldn't exist. (Of course, sysops play a role in this by directing "traffic" to particular data libraries.)

Although there may be thousands of users who access a particular board on a periodic basis, each of the SIGs has a coterie of regulars. These are the users who post 90 percent of the messages and, in many cases, carry on the most sophisticated dialogue regarding software and hardware issues. This group of active members may number anywhere from a handful to upwards of a hundred, while actual SIG members may be in the thousands.

CompuServe, for example, claims more than 7,000 members in its TI Forum (including TI Pro users). But this number can be misleading.

Generally, once a user has logged onto a network SIG, he remains a member. The exception to this may be on The Source, which charges a minimum fee of \$10 per month to its subscribers. Subscribers who don't use The Source very often are likely to cancel their memberships to escape the minimum monthly charge. The other networks bill only on the basis of the actual number of minutes spent online. And it doesn't matter whether a subscriber accesses the service once in a blue moon. (Let's say you decide to "visit" the Atari SIG on a network. When you do, you automatically become a member, and remain a member even if you never visit that SIG again.)

The majority of users, are likely to go online on a periodic basis, perhaps once a week. These periodic users seldom leave messages, preferring instead to review the contents of data libraries anonymously.

SOFTWARE LIBRARIES

Next to the main message-base of a SIG, the most popular data library has to be the software library. Here users can up and download programs. Some of the boards, such as CompuServe, have thousands of public domain and fairware programs available for downloading.

Here, too, the numbers revealed in the
(See Page 32)

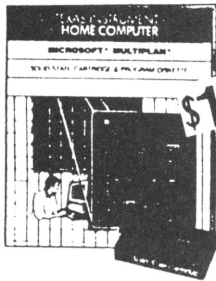
Super Savings

NEW LOWER PRICES

On Essential Software Packages

ATTENTION TI-99/4A USERS....TEX-COMP HAS LOWERED THE PRICE ON TI SOFTWARE THAT IS ESSENTIAL TO THE TI-99/4A USER..EXTENDED BASIC, EDITOR ASSEMBLER, MULTI-PLAN, LOGO II, TI-WRITER AND MINI-MEMORY, ALL **KEY** SOFTWARE AT A FRACTION OF ITS ORIGINAL COST.

There may never be a better time than now to buy



\$14.95 + S&H

TI Multi-Plan

Electronic Worksheet with many advanced features and built-in ease of use. Requires disk drive and controller, and 32K memory Expansion Unit. Printer and RS-232 Interface recommended. Cartridge and Disk.



\$14.95 + S&H

TI Writer

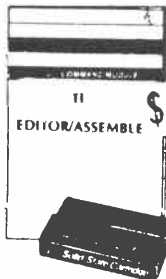
This is a professional word processing system for the TI-99/4A. Provides the features and ease of use found in office systems. Requires disk drive, 32K Memory and Printer. Module and Disk.



\$12.95 + S&H

Logo II

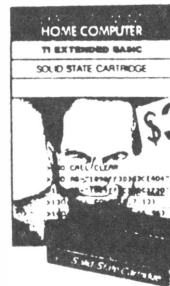
In use by educators throughout the country. Requires cassette or disk based system and 32K memory expansion.



\$9.95 + S&H

Editor/Assembler

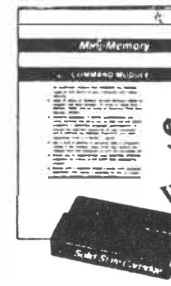
This is the complete version with manual, module, program disk and the disk version of Tombstone City as an example of assembly language programming. 32k and disk drive are required. This package will allow you to program the 99/4A in TMS 9900 Assembly Language and gives you access to all system features. Provides the fastest speed possible from the 16-bit processor!



\$39.95 + S&H

Original TI-Extended Basic

A powerful, high-level programming language that expands the capability of your TI-99/4A Home Computer. Includes TI Extended BASIC module (36K bytes of preprogrammed memory) and Owner's reference manual.



\$12.95 + S&H
WITH FREE Word Processing Bonus

Mini-Memory

This software cartridge adds memory to your system. Totals 14K of memory (6K of ROM, 4K of RAM). Mini Memory includes a built-in battery, permitting programs and data stored in RAM to be retained even if module is removed from console.
BONUS: FREE Mini-Writer I word processor (\$19.95 value) with Mini Memory Purchase.

SPECIALS!!! TI-WRITER/MULTIPLAN UPGRADE DISK (reg.\$4.95) only \$1.00 with TI-WRITER OR MULTIPLAN!

"INTRODUCTION TO ASSEMBLY LANGUAGE" (15.00 value) only \$1.00 with Editor Assembler.

TI LOGO WORKBOOK (reg.\$5.95) only \$1.00 with LOGO II

"TEACH YOURSELF EXTENDED BASIC" (disk or cassette) only \$1.00 with Extended Basic

SUPER EXTENDED BASIC (Extended Basic with additional commands and graphics only \$49.95)

TERMINAL EMULATOR II MODULE FOR telecommunications and Text-To-Speech (reg.\$9.95) only \$4.95 with any software on this page. All specials must be ordered at same time as the qualifying software!

Send order and make checks payable to

TEX-COMP

PO Box 33084, Granada Hills, CA 91344



AUTHORIZED DEALER



VISA and MASTERCARD
HOLDERS CALL DIRECT

(818) 366-6631

24 Hour Order Line

TERMS: All prices FOB Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 Minimum). East of Mississippi 4 1/2%. Add 3% for credit card orders. Prices and availability subject to change without notice. We reserve the right to limit quantities.

NOTE: Payment in full must accompany all orders—credit card, company check or money order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6 1/2% sales tax.

TELECOMMUNICATIONS—

(Continued from Page 30)

charts may be deceptive. For example, while GENie lists more than 2,600 programs in its software library, many of the entries are text files and, in some cases, not even TI compatible. The GENie TI SIG includes support of other "orphan" computers, such as Adam. However, none of the other orphans has nearly the dedicated following of the TI99/4A so it's safe to say that 90 percent of the files and programs in GENie's software library are TI specific.

CompuServe numbers thousands of programs in its software library, the equivalent of 300 single-sided disks. But, as Sysop Jim Horn points out, trying to count the number of programs in a software library is pointless since the advent of archiving. Because of this data compression technique, a single program name in a software library may actually consist of a dozen or more separate programs. For example, while Telco is listed as a single program name on all the networks, it consists of more than 20 programs after downloading and "unarchiving."

Major fairware and public domain releases, such as Telco, MDOS and Archiver, can be found in the software libraries of all four networks. The larger software libraries, however, will include a variety of programs ranging from utilities and applications to games. Since there are no copyright infringements to worry about, any of the networks should theoretically be able to obtain any programs included in the libraries of their competitors. However, in practice, this is not the case.

Judging a software library is basically a numbers game. The larger the selection the more likely you'll find what you're looking for.

In regards to downloading programs, many are in archived format and must be downloaded using XMODEM protocols. Archived programs must be extracted using Barry Boone's Archiver program, since virtually all of the archived programs are archived using his program. This is a painless process. The purpose of archiving is to compress programs so that they can be downloaded in less time and take up less space on a disk. Archiving has its critics, but in terms of telecommunications it is a time and money saver.

General information about TI-SIGs

	CompuServe	Delphi	GENie	Source
Members	7000+	1150	2000+	453
Messages/week	300	140+	20-100	15
Downloadable pgms.	Thousands	1116	2600+	247
Data libraries	18	12	12	7
Prime Time	NA	7 a.m.-6 p.m.	8 a.m.-6 p.m.	7 a.m.-6 p.m.
Non-prime time	NA	6 p.m.-7 a.m.	6 p.m.-8 a.m.	6 p.m.-7 a.m.
Hard copy manual	incl./fee	incl./fee	incl./fee	\$21.95
Initial fee	\$39.95	\$19.95*	\$29.95	\$29.95
Min. monthly usage	NA	NA	NA	\$10

1. Registered TI users.
2. Includes TI Pro and private messages
3. About 30 million bytes of programs
4. Based on time in caller's time zone.
5. Initial fee includes several hours of free online time. Each service conducts promotional drives that could result in substantial savings to new members. For example, those who signed up on The Source in June had the initial fee waived, were issued \$60 free online credit and could purchase the manual for \$12.95.
6. Promotional rate of recent past but may not remain for long.

Online charges of the four networks vary considerably, and several have special plans that reduce hourly costs for users who agree to go online a specified number of hours per month. Only one service, The Source, has a minimum charge (\$10 per month) which is billed whether you go online or not. In practice, \$10 is worth about 77 minutes online at 1200 baud during non-prime time periods. Those who spend less time than that on the service probably are wasting their money.

Costs based on baud rate should also be considered in determining which networks to subscribe to. Several years ago, 300 baud was the standard for hobbyists. Now 1200 is the mainstay and 2400 is gaining in popularity. Those services that charge a premium for 1200 baud are behind the times. At 1200 baud, users gain nearly a four-fold increase in speed when it comes to downloading, uploading or simply scanning the network's various databases. Since it doesn't cost a network any more to support 1200 baud than it does to support 300 baud, the only reason to charge more for the faster baud rate is to gouge the consumer.

The only argument that can be made to justify a higher rate for 1200, 2400 or higher baud rate is that the network had to purchase faster, more expensive modems to support the faster transmission rates. But that doesn't hold water for long,

since 1200 baud modems have been available for years and aren't terribly expensive to begin with. Networks that upgrade to include support for 2400 baud may initially be justified in assessing higher fees for 2400 baud simply to recover costs. But these costs can be recovered quickly and shouldn't be used as a justification for a permanent premium rate for faster service.

NEXT MONTH — Surcharges, What's in the Data Libraries, and How do you Decide Which one to Subscribe To.

Reader to Reader

First a correction: Jim Lohmeyer asks that no more program suggestions be sent to him. He wrote the letter asking for suggestions quite some time before it was printed and says now "I have more than enough to work on and have moved to California! Not only does the extremely late printing of my letter send the Post Office into hysterics, but I also have to spend time and money replying individually to the people who write." We regret the error.

Patrick Graham of 159 Donald Dr., North Bay, Ontario, Canada P1A 3H2, writes, "My system is CorComp 9900 micro-expansion with 32K plus a CorComp Memory Plus 512K RAMdisk supported by a Panasonic P1080 printer and an Avatex 1200 modem. I am frustrated by the inability to run to completion any terminal programs, such as Fast-Term, Mass Transfer or 4A/Talk so I can get on any distant BBSes with the knowledge that I will be able to complete the session and log off properly.

"So far as I can judge by component exchanging, the problem, which occurs when the system has been 'up' for a while, seems to be either ROM-based in my CC9900 expansion box or somehow involves the RS232 port, because everything else works well. I would love to hear from anyone who has a similar problem, or even a solution."

Geneve

Redefining colors from MDOS

By MIKE DODD

In the spirit of MDOS programming, I have yet another MDOS-mode program. This program does a very simple thing: it allows you to re-define the colors. Readers of past columns of mine will recognize this as an MDOS-mode version of the GPL-mode program I presented a while back that does the same thing. However, to make it somewhat more interesting and educational, the program also includes a batch feature. You can, instead of specifying four numbers, specify a filename. The program will then read that file and get a list of numbers from it. It is possible to re-define all 16 colors with one command using this method.

The program (obviously) utilizes the DSR system call of MDOS. This is the first time that particular call has been used in this column. MDOS DSR access is rather similar to 99/4A DSR access. One difference is that the PAB, which now resides in CPU (instead of VDP) is 6 bytes longer. The PAB also allows the transfer of data to and from CPU, instead of restricting you to VDP. The format for the PAB is pretty well covered in Paul Charlton's XOP manual, a must for any MDOS programming.

The program should be typed in, assembled, and linked in the usual fashion. There are two ways of accessing it. For the purposes of discussion, I'll assume that

the final program image file is named COLOR.

If you type COLOR color red green blue, where the last four are numbers, then that color will be set with the values you specify for red, green and blue. Please remember that color must be a number from 1-16 and the color values must be from 0-7.

The other way to access it is to type COLOR filename. The program will then read the specified file (assuming it is a DIS/VAR 80 file) and use the numbers contained therein. For example, assume you have a file on drive B: named COLSET1 that reads as follows:

```
16 0 0 0
6 7 7 7
2 7 7 7
```

Typing COLOR B:COLSET1 would then set colors 16, 6 and 2 as specified.

USING THE EXTRA 32K OF RAM

Paul Charlton has written a very clear, detailed document on how to add 32K of no-wait-state RAM to your Geneve. The article is available on Delphi's TI Net (and other bulletin boards) in the 9640 Database.

I have modified MDM3 to work with MDOS V1.06, V1.08 and (presumably) later versions. The version number is V2.2. It, too, is available on Delphi's TI Net (and other bulletin boards) in the 9640 Database.

The 9938 VDP chip allows for very high resolution without requiring any additional CPU memory. The Geneve is shipped with 128K of VDP RAM. This is enough memory to easily store a 512 x 424 x 16 screen (columns x rows x colors) or a 256 x 424 x 256 screen. In fact, additional CPU memory will not increase the screen mode capability of the Geneve at all, as the 9938 will use only VDP memory.

Genial Computerware is now shipping MacFlix by J. Peter Hoddie. MacFlix, designed to display MacPaint pictures, is, I believe, the first piece of software to take advantage of the 512 x 424 x 16 screen mode of the 9938. In that mode, the 9640 will actually display more data than a Macintosh screen is capable of.

Some users have reported using V1.09 of MDOS. It should be noted that V1.09 was not released by Charlton, Myarc or its representatives. V1.08 is (as of 10/10/88) the most recent official version.

Finally, a question: what would you like to see in this column? Please write and tell me. You don't have to have specifics, just general concepts. Do you want to see more MDOS programming? More non-technical information? Let me know!

*Send correspondence to: Mike Dodd,
116 Richard Dr., Oliver Springs, TN
37840.*

REDEFINE COLORS IN MDOS

0001	* MDOS Color Pallete Set	0021	MOV R0,R2	Local page 1
0002	* Copyright 1988 by Mike Dodd.	0022	CLR R3	Slow RAM is fine
0003	* Written for MICROpendium magazine.	0023	SYS 2MEM	Memory management XOP
0004	*	0024	MOV R0,R0	Error code
0005	* format: COLOR color red green blue	0025	JNE ERROR	If any error, go to error routine
0006	* color = color to set (1-16)	0026	LJ R0,3	Map page opcode
0007	* red = red value (0-7)	0027	LJ R1,1	Local page 1
0008	* green = green value (0-7)	0028	LJ R2,7	Execution page 7
0009	* blue = blue value (0-7)	0029	SYS 2MEM	Memory management XOP
0010	* -OR-	0030	MOV R0,R0	Error code
0011	* COLOR (filename)	0031	JNE ERROR	If any error, go to error routine
0012	* which will cause (filename) to be read as a batch file	0032	* Get the command line	
0013		0033	LJ R1,CMDLIN	Buffer
0014	DXOP SYS,0	0034	MOV8 2H28,*R1+	Write maximum length
0015		0035	BL 2CMDSTR	Get it
0016	* Start of program	0036	JNE ERROR	If any error, report it
0017	LWPI >F000 Load workspace pointers	0037	CB *R1,2H30	Is it a number?
0018	* Get a page of memory at >E000	0038	JL SC1	No
0019	LJ R0,1 Get page opcode	0039	CB *R1,2H39	
0020	MOV R0,R1 Get one page			

(See Page 34)

COLORS—

(Continued from Page 33)

(Continued from Page 33)					0102	SYS	2DSR	Access DSR	
0040	JH	SC1			0103	MOV	B 2PAB+2,R0	Get error code	
0041	BL	2SETCOL	Yes, it is a number -- do it		0104	SRL	R0,13		
0042	DONE	BLWP 2)0000			0105	JNE	GODSR1		
0043	*				0106	RT			
0044	*	* open file and read input from it			0107	GODSR1	C1 R0,5		
0045	SC1	LI	R0,8	Parse filename	0108	JNE	ERROR		
0046	*			R1 already set to CMDLIN+1	0109	JMP	DONE	EOF error -- exit back to MDOS	
0047		LI	R2,PABLEN	Output buffer	0110				
0048	MOV	B 2H28,*R2		Maximum length	0111	GETNUM	CLR R2	Start with 0	
0049	CLR	R3		Generate device name suffix	0112	GN1	MOV	B 2CMDLIN,R0	Get length
0050	SYS	2UTIL		Parse it	0113	JEQ	GN2	No more characters -- must be done	
0051	MOV	R1,R1		Get error code	0114	SB	2H01,2CMDLIN	Minus one	
0052	JNE	ERROR			0115	MOV	B *R1+,R0	Get character	
0053	MOV	B 2H00,2PAB		Open opcode	0116	CB	R0,2SPACE	Space?	
0054	BL	2GODSR		Access DSR	0117	JEQ	GN2	Yes -- must be done	
0055	MOV	B 2H02,2PAB		Read opcode	0118	CB	R0,2COMMA	Comma?	
0056	SC2	BL	2GODSR	Read a line	0119	JEQ	GN2	Yes -- must be done	
0057	MOV	B 2PAB+13,2CMDLIN			0120	*	* Make sure it's really a number		
0058	BL	2SETCOL		Set colors	0121	SB	2H30,R0	Minus ASCII offset	
0059	JMP	SC2			0122	CB	R0,2H39	'9'	
0060					0123	JH	ERROR	Not a number -- error	
0061	SETCOL	MOV	R11,R10	Save return address	0124	MPY	2D10,R2	Multiply what we have by 10	
0062	LI	R1,CMDLIN+1			0125	MOV	R3,R2	Move result back to right place	
0063	BL	2GETNUM		Get color to set	0126	SRL	R0,8	To LSB	
0064	MOV	R2,R6		Save	0127	A	R0,R2	Add to accumulator	
0065	JEQ	ERROR		If 0, then error	0128	JMP	GN1	Get another number	
0066	CI	R6,16		Greater than 16?	0129	GN2	RT	Return	
0067	JH	ERROR		Yes -- error	0130				
0068	DEC	R6		Minus one for assembly offset	0131	*****			
0069	BL	2GETNUM		Get red value	0132	*			
0070	CI	R2,7		Greater than 7?	0133	*	convert command args into string		
0071	JH	ERROR		Yes -- error	0134	*	by J. Paul Charlton		
0072	MOV	R2,R7			0135	*			
0073	SLA	R7,12		Shift left twelve bits	0136	*	IN: R1 points to string buffer (byte after length byte)		
0074	BL	2GETNUM		Get green value	0137	*	length byte must have max length of buffer		
0075	CI	R2,7		Greater than 7?	0138	*			
0076	JH	ERROR		Yes -- error	0139	*	OUT: ok R0=0 equal flag SET		
0077	A	R2,R7			0140	*	error R0=-1 equal flag RESET		
0078	BL	2GETNUM		Get blue value	0141	*			
0079	CI	R2,7		Greater than 7?	0142	CMOSTR	MOV	B 2)0128,R2	get pointer to command string
0080	JH	ERROR		Yes -- error	0143	JEQ	NOSTR	zero length string	
0081	SLA	R2,8		Shift left eight bits	0144	CB	22(R2),2-1(R1)	compare lengths of strings	
0082	A	R2,R7			0145	JHE	BADLEN	string too long for the buffer	
0083	LIMI	0		Turn off interrupts	0146	MOV	R1,R5	cursor to caller's string buffer	
0084	LI	R0,2000		VDP Write to R16	0147	DEC	R5		
0085	A	R6,R0		Pallete #	0148	MOV	B 22(R2),R6	count of chars to move	
0086	SWPB	R0			0149	SRL	R6,8		
0087	MOV	B R0,2VDP1		Write to VDP port 1 (address)	0150	INCT	R6		
0088	SWPB	R0			0151	*			
0089	MOV	B R0,2VDP1		Write to VDP port 1 (address)	0152	NXTNOD	MOV	R2,R3	cursor within node
0090	SWPB	R0		Delay time	0153	INCT	R3		
0091	MOV	B R7,2VDP2		Write red and blue data to port 2	0154	MOV	R2,R4		
0092	SWPB	R7			0155	AI	R4,8	pointer to end of node	
0093	MOV	B R7,2VDP2		Write green data to port 2	0156	*			
0094	LIMI	2		Turn interrupts back on	0157	NODL1	MOV	B *R3+,*R5+	
0095	B	*R10		Return to caller	0158	DEC	R6		
0096					0159	JEQ	NODJ1		
0097	ERROR	BL	2SHOTXT	Display text	0160	C	R3,R4		
0098		DATA	ERRTXT	Error text	0161	JL	NODL1		
0099		JMP	DONE	Return to MDOS	0162	MOV	B *R2,R2	this link never zero if valid string	
0100					0163	JMP	NXTNOD		
0101	GODSR	LI	R0,PAB	Point to PAB				(See Page 35)	

(See Page 35)

COLORS—

(Continued from Page 34)

0164 *			0198 VID DATA 6	Video XOP number
0165 NODJ1 CLR R0			0199 MEM DATA 7	Memory XOP number
0166 JMP NODRET			0200 DSR DATA 8	
0167 *			0201 UTIL DATA 9	
0168 NONSTR CLR R0			0202 D10 DATA 10	
0169 MOV B R0,2-1(R1)			0203	
0170 MOV B R0,*R1			0204 ERRTXT BYTE 13	Error message - length of 13
0171 JMP NODRET			0205 TEXT '---Error---	Actual text
0172 *			0206 BYTE >0D,>0A	CRLF
0173 BADLEN SETO R0			0207 H00 BYTE >00	
0174 NODRET MOV R0,R0			0208 H01 BYTE >01	
0175 RT			0209 H02 BYTE >02	
0176			0210 H28 BYTE >28	
0177 * Display text on the screen			0211 SPACE BYTE ' '	
0178 SHOTXT MOV *R1+,R0	Get address of length byte		0212 COMMA BYTE ', '	
0179 MOV B *R0+,R2	Get length byte		0213 H30 BYTE >30	
0180 JEQ SHORET	Null length - don't display anything		0214 H39 BYTE >39	
0181 SRL R2,8	To LSBy		0215	
0182 MOV R2,R3	Save		0216 CMDLIN BSS 41	Buffer for command line
0183 LI R1,TXTBUF	Text buffer		0217 EVEN	
0184 SHOTX1 MOV B *R0+,*R1+	Move		0218	
0185 DEC R3	Any more to move?		0219 PAB BYTE >00	opcode
0186 JNE SHOTX1	Yes		0220 BYTE >14	Input, display, variable
0187 LI R1,TXTBUF	Text buffer		0221 BYTE >00	Error code
0188 LI R0,>27	WriteTTY opcode		0222 BYTE >00	High byte for buffer address
0189 SYS 2J1D	Video XOP		0223 DATA CMDLIN+1	Buffer to store input
0190 SHORET RT	Return		0224 DATA >0000	Record number
0191			0225 DATA >0050	Record length (80)
0192 *****			0226 BYTE >00	CPU access
0193			0227 BYTE >00,>00,>00	Character count
0194 TXTBUF EQU >E000			0228 BYTE >00	Status byte
0195 VDP1 EQU >F10A			0229 PABLEN BYTE >00	Length byte
0196 VDP2 EQU >F10C			0230 PABNAM BSS 40	Buffer
0197			0231	
			0232 END	

Press to debut at Chicago TI Faire

More than two dozen exhibitors and nine seminars are planned for this year's Chicago TI Faire/Convention, Friday and Saturday, Nov. 11-12.

Several products are expected to make their debut, including the Press word processor by Charles Earl and Mike Dodd's Hyper Copy for the Geneve. Myarc is also expected to show the latest versions of MDOS, Advanced BASIC for the Geneve and the Hard and Floppy Disk Controller.

The fair is sponsored by the Chicago Area TI-99/4A User Group. Fair manager is Marcy Brun. The fair hotline number is 312-695-9291.

This year's fair will be at the Holiday Inn in Rolling Meadows (3505 Algonquin Rd., Rolling Meadows, 312-259-5000.)

The fair is again being held in conjunction with the Milwaukee TI-Faire, Sunday, Nov. 13. It is sponsored by the Milwaukee Area TI-99/4A User Group and The

Wisconsin 99er Computer Council. Fair organizer is Gene Hitz (414-535-0133).

Here is a schedule of activities:

- Nov. 11 — Social Mixer, 8 p.m.-midnight. Admission is \$4.

- Nov. 12 — 9 a.m.-6 p.m., fair and convention. Admission is \$4. A dinner is planned from 7 to 9:30 p.m. Admission is \$10 per person.

- Nov. 13 — Milwaukee TI-Faire, 9 a.m.-5 p.m., Quality Inn, 5311 S. Howell Ave., across from Mitchell Field Airport.

Here is a list of exhibitors, which may be updated prior to the fair: Asgard Software (software), B&D Computer Supplies (supplies), Bud Mills Services (Horizon RAMdisk and P-GRAM card), CADD Electronics (GRAMulator), C&G Drives (disk drives and power supplies), Chicago Area TI-99/4A User Group (software, T-shirts), Chicago B128 User Group (disks, supplies), Competition Computer

(printers), Data Systems (software), Fox Valley User Group (membership information), Genial Computerware (software), GENie (telecommunications service), Great Lakes Software (software), Hunter Electronics (hardware and software), L.L. Conner Enterprises (hardware, software, cables and chips), MICROpendium (subscriptions), Midwest Engineering Consultants (RAMdisks and other products), Myarc Inc. (Myarc products), National Myarc Users Group (membership information), Ottawa Users Group (software), Rave 99 Co. (keyboard, speech adapter and memory expansion cards), Texaments (software), TI User Group of Will County (membership information), Tigercub Software (software) and Triton Products Co. (catalogs).

At least nine seminars are scheduled throughout the day Saturday. Included are

(See Page 36)

Hard disks: backups & downloads

By JOHN KOLOEN

This may seem obvious, but downloading files from bulletin boards to a hard disk may not be a great idea.

Sure, as long as the terminal software allows the user to designate a hard disk directory as a destination it can be done. And programs such as TELCO make this easy. But many files are archived, and there is no archiver program for the TI or Geneve that will address hard drive directories. So, these programs will have to be transferred to a floppy to extract the files anyway.

More importantly, downloading to a floppy makes it easy to avoid problems associated with "virus" type programs. (None has been reported that infect TI systems, but they are a big problem in the PC world and a highly recommended practice there is to download all data to floppies to avoid infecting a hard drive.) Also, there is a minuscule chance that an electrical surge or similar event during the downloading process could cause a problem for other files on the hard disk.

Users who like the convenience and speed of downloading to a hard disk can self-insure themselves by frequently backing up the hard disk to floppies. That way, no matter what happens, the files can be restored without any serious inconvenience to the user.

Backing up a hard disk is a good practice for anyone, and doing it on a weekly basis is a recommended practice that is ignored by most users, including me. What shouldn't be ignored, however, is the use of at least two alternating sets of backups. Back up the hard disk to one set one week, and the next week back it up to the second set. Then, on the third week, reuse the first set of backups, and so on.

Even though you may need dozens of diskettes for a single backup set, don't try to pinch pennies and get along with one set. There are as many reasons as to why multiple backups are desirable as there are ways for a floppy or hard disk to go bad.

For example, suppose you are backing up your hard disk over your only set of backup disks and the power goes out. Or a power surge occurs. What happens to the backup? More than likely, you will have lost it. Which means that you've not only

lost the backup you had, but you also lost the backup you were creating.

Multiple backups also insure against the possibility of a defective diskette creeping into your backup sets. Diskettes are delicate and it doesn't take a lot to damage them, even while they're nestled in a box. Excessive heat is enough to do it.

For an entire 20 megabyte hard disk, you'll need as many as 60 floppies for a complete backup. Backing up a nearly full hard disk, then, is a time-consuming process. As a result, it's a process that most hard disk users eschew. It may be that backing up your hard disk once a month, every other month or even less frequently will give you sufficient piece of mind. It just depends on how much faith you have in your hardware and media and how inconvenient it would be if you lost everything on your hard disk and the most recent backup set you have is six months old.

Many hard disk users measure their risks and decide that even if all is lost, there are

only a few files or programs that they couldn't do without. Thus, they do frequent backups of these important subdirectories while ignoring the rest.

MICROpendium does this with its circulation files. These files are backed up several times a week, with one backup set always kept at an off-site location. Losing this data would virtually wipe out the magazine. But most other data on the hard disk can be reconstructed if lost, such as word processing files, and are backed up infrequently.

Why keep one set of backups off-site? To guard against such unpredictable events as theft, fire and vandalism. While the possibility of these events may be remote, if they occur the result can go way beyond the immediate inconvenience of insurance adjusters and police reports.

To what extent a user needs to maintain backups of his hard disk is a personal decision. But, as a rule of thumb, if you absolutely, positively can't get along without a particular program or file, back it.

FAIR—

(Continued from Page 35)

the following:

- Irwin Hott — How the TI is Used by a Blind Person
- Chris Bobbitt, Charles Earl and Ruth O'Neil — demonstration of the Press word processor
- J. Peter Hoddie — demonstrations of new programs
- Bud Mills — Horizon RAMdisk and P-GRAM card
- Donn Granros and Chris Bobbitt — The Legends Sequels
- Charles Earl and Tom Bentley — TELCO, Texlink and Batch-It
- Jim Horn — Outreach Program to get used TI's into the hands of educators and increase user group membership

SEATTLE FAIR

Some 300 TI users attended the Seattle TI Convention held in September. Highlights included demonstrations by Myarc and Genial Computerware and Miller Communications.

Myarc's Jack Riley showed a nearly complete version of Advanced BASIC

(V3.0) for the Geneve, a version of the windowing, multi-tasking environment GEME and its hard and floppy disk controller.

Genial Computerware developed a lot of interest with a demonstration of its MacFlix software. MacFlix allows TI users to view and manipulate Macintosh pictures on a TI or Geneve. Genial sold out its supply of the program following the demo.

Dave Miller's Videoflex Card is the costliest software available for the Geneve at \$10,000. Designed to edit news videotape, the card and software are complete. Only the documentation remained to be finished. According to Miller, a PC compatible version of the software also will be marketed for use with 80286 and 80386 microprocessors. The cost of the PC version of the software and card is expected to exceed \$15,000.

Speakers included Scott Darling (GENie), Jim Horn, (CompuServe), Chris Bobbitt (Asgard), Tom Auleta (Genial Computerware), and Jack Riley (Myarc).

Myarc Q&A

Myarc to mail software in November

By JOHN KOLOEN

We'll get to the questions in a minute. First, here's the good stuff:

- Registered Geneve users will be getting their MDOS 1.14, GPL 1.04, MY-Word 1.21, Myarc Advanced BASIC and Pascal Runtime 4.22 in November. MDOS 1.14 will include an external command for graphics support for printers. This file will most likely be included on the GPL 1.04 disk, since the MDOS disk is full. Along with the software, users will receive the option of purchasing an extended warranty for their Geneves, price yet to be determined. (Incidentally, Myarc will repair its memory expansion cards for \$60 each, excluding the cost of any DRAMs.)

- MDOS 1.14H will be released at the same time as MDOS 1.14. 1.14H provides support for hard disks directly from MDOS and will be included with the Myarc Hard & Floppy Disk Controller. It is of no use to those without a hard disk.

- The release of Pascal Runtime 4.22 will mark the opening of a new segment of the software market for Geneve users. The first applications program to be available to run under this software is a Geneve version of the Swan database program. Swan is written in Pascal and is being ported from a PC environment to the Geneve environment. According to Myarc spokesman Jack Riley, this is done via a modem, with a translation program that converts the PC code into Geneve-readable code.

Pecan Software Systems Inc. (1410 39th St., Brooklyn, NY 11218 — 718-851-3100) has a library of Pascal programs available that could be converted for use with the Geneve. A list of these programs is available from Pecan, according to Riley. We'll publish a partial list next month, but readers may order it directly from Pecan. We'll take suggestions about what you'd like to see and pass it on to Myarc. (The only hitch to the conversion process comes with programs that are written to take advantage of a specific computer's hardware, such as a Macintosh. Many of the programs don't require special hardware features and can thus be converted in relatively little time.)

- Myarc has released the source code to

RS-Bug to Tom Freeman and Jim Lohmeyer. They are reworking it so that it will load from MDOS. The program is expected to be sold by Freeman and Lohmeyer and will allow users to develop assembly language programs on the 9640. Lohmeyer is also putting together a package of example XOPs that will be available as public domain material. Paul Charlton already has a Linker and Loader available and is said to be working on an assembler to load from MDOS.

- Work is underway on an EPROM-based version of MDOS and GPL. Myarc will show a Geneve with an MDOS/GPL EPROM at the Chicago TI Faire. Future versions will include special functions, such as an editor to create AUTOEXEC files, custom loaders for the Myarc Disk Manager, etc. The EPROM-based MDOS boots in 3-5 seconds, thus the familiar Geneve Swan will be eliminated. Part of the 16K that the Swan takes up will be used to develop the special functions.

- MDM5 is changing its name to MDM6 with V1.26. File names are also different so that users won't mix files from one version with those of another.

- Here's what Myarc will be demonstrating at the Chicago fair during its seminar period: Hard & Floppy Disk Controller, MDOS V1.14, EPROM-based MDOS, Myarc Advanced BASIC, possibly the Pascal Runtime and Swan database manager, and GEME.

Now for the questions:

Will those of us who have earlier versions of Geneve software receive the final versions from Myarc?

Myarc's policy is that all registered owners of the 9640 will receive all of the what we call the final software, and at this point in time that looks like version 1.14 of MDOS, 1.04 GPL, 1.21 of MY-Word, version 1 of Myarc Advanced BASIC, version 4.22 of Pascal Runtime. And that is tentatively scheduled sometime to start mailing approximately the middle of November. But yes, they will receive at no additional charge all of that software.

Is it possible to use a second disk controller card in the PEB with the HFDC?

Yes.

Can a TI controller card be used along

with my Myarc disk controller card model DDCC-1 so that the Companion Word Processor can be used?

No, you cannot use a floppy disk controller because you have no way of changing the CRU address. You can use the hard and floppy disk controller because it has four switches that allow you to set the CRU address from >1000 to >1100 to >1200, etc. As such, you can attach up to eight drives: four to your floppy disk controller if it's a Myarc or three to your floppy disk controller if it's a TI, and an additional four to your hard and floppy disk controller. When you do that the four drives attached to your floppy disk controller are accessed as DSK5, 6, 7 and 8. But only with the HFDC.

When I first turn on my Geneve it boots up and will work only in MDOS mode, but if I try to boot up GPL it boots up to the load screen and immediately goes to a condition where the first underline character is shown without flashing and the keyboard doesn't respond. Turning the power off and on again is all I can do. Eventually it will load. When I load MY-Word, if I try to Show Directory it will do that and fill the screen with gibberish and again I have to power down. It didn't start doing this until lately. How can I fix it?

Well to me it sounds like a software problem, not a hardware problem. It also sounds like he's got either a bad copy of GPL and/or MY-Word or he's got an incompatible copy. In other words, he's using version 0.99 of GPL with version 1.06 or 1.08 of MDOS. This will create a similar symptom as described. But if he's tested all of that and is sure it's not, he can call and get an RMA number and we'll look at his card. But I really don't think that's the problem. Or he can call (205-854-5843) when he's in front of his machine and I'll be glad to step through it so we can analyze it. I am normally at the office between 5 and 6 p.m. Monday through Thursday to give people an extra hour to call with those kinds of problems.

Send your Myarc questions to MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

Bunyard Hardware Manual

A roadmap for hardware hackers

By TONY LEWIS

I freely admit that I am a hardware hacker who has cut his teeth on the TI99/4A system, and am still learning more about this "orphan" as time goes by. Years ago, I had purchased the Texas Instruments "Technical Data" manual that covers the console and PE Box, but found it wanting in explaining several hardware aspects of the system. Well, the "Hardware Manual for the Texas Instruments 99/4A Home Computer," by Michael Bunyard, is available to fill in most of the missing information that hardware hackers have been searching for. Mike Bunyard is a former Senior Member of the Technical Staff at Texas Instruments, and his manual is the closest that most of us will come to getting inside the file drawers of the 99/4A design team.

Documentation: Chapter 1 introduces the reader to the organization of the manual, and lists several other sources of information relating to the 99/4A and the chips used in it. Chapters 2-3 cover the various subsystems of the 4A, such as video, RAM, cassette interface and the 9900 itself. Each of the main subsystems is covered in varying levels of detail. There is a large section in Chapter 2 on GROMs that more than justifies the cost of the manual. It explains (indirectly) how devices like the GRAM Kracker and GRAMulator can override the console GROMs: GROMs are made by the PMOS process, not TTL, and are therefore poor line drivers of the data bus. This means that a TTL compatible memory system with the appropriate bus driver chip can "force" the CPU to read its data and not the GROM's data, since the GROM data driving capability is much weaker. Most of the other information concerning data buses, memory maps, and CRU allocation are covered better in the TI Technical Data Manual.

Chapter 4 is on the "Pitfalls" of designing equipment or assembly programs for the 99/4A and PEB system. This is valuable information to help developers avoid some of the idiosyncrasies built into the hardware that might cause an otherwise well-developed hardware project not to function properly. Some of the informa-

Review

Report Card

Documentation	A
Ease of Use	A-
Value	A+
Final Grade	A

Cost: \$19.95

**Publisher: The Bunyard Group, AMS,
P.O. Box 53171, Lubbock, TX 79453**

tion is purely hardware. For example, the pinout of the Command Module Port is not the same as the 36-pin connector on the motherboard. Other information relates to assembly programs, such as minimum wait times between accesses to the VDP or GROMs.

The next couple of chapters cover the TMS9900 microprocessor's control, data and address signals, interrupts, CRU functions, and instruction set. You should note that the description of the signals is oriented towards their use in the design of electronic circuits and do not necessarily cover "all you need to know" about the 9900 signals or their timing relationships. The architecture of the 9900 as it relates to CRU and byte/bit manipulation instructions is covered adequately. About 8 pages in Chapter 6 are used to lightly touch on assembly language instructions. However, this subject is covered better by some of the assembly texts already on the market.

Chapters 7-11 cover the Peripheral Expansion Box and the for PEB cards released by TI: the 32K memory expansion, RS232, P-Code, and disk drive controller. The old "sidecar" equivalents are also covered wherever applicable.

The chapter on the PEB isn't much, but each of the four expansion cards is covered in detail. As with other chapters, the information relates to the electronic logic and architecture of the card, and helpful data on various signals and how they are used. The software (aka DSRs) pertaining to each card is not discussed. Schematics of the cards are not provided in the manual, but may be purchased separately from TI. I strongly recommend that if you are in-

terested in studying any of these cards in depth, that you have the schematic of the card prior to reviewing its description in the Hardware Manual; otherwise you'll get lost very rapidly.

Appendices A-C cover the pin definitions for the Command Module Port, 44-pin side port and PEB, respectively. Appendix G is a schematic of the motherboard that doesn't appear to contain any more (and in some cases, less) information than the schematics in the TI Technical Data manual.

A neat and welcome section is the Extended BASIC module schematic and description in Appendix F. The most valuable appendices are D-E, which cover the design basis and schematics for a GROM simulator. I have not (yet) tried to build the circuit, but it certainly looks like everything you need is covered in the schematics and text. The schematic uses an EPROM for memory, but a GRAM simulator could be made by use of a static 8K RAM chip and the addition of a few control lines.

Ease of Use: As you may have already noted from my previous comments, the Bunyard Hardware Manual is written for people who like to hack around the 4A and its PEB cards. Don't go looking for help on assembly programming or DSRs here; consult the many books and MICROpendium articles available on the software side of the TI computer.

The Hardware Manual is an intermediate to high level text on the electronic design of the 99/4A system, which means that electronic novices should be forewarned that its author assumes that you have more than a passing knowledge of how modern microprocessor-based circuits function. But don't let that discourage you if you are interested in getting your feet wet in the TI hardware world because several introductory manuals and books are listed in the first chapter to help bring you up to speed.

The text is, in my opinion, very readable, and not as dry as you would expect from an engineer (like myself). The manual has plenty of schematics and some interesting cartoons at strategic locations.

(See Page 39)

MANUAL—

(Continued from Page 38)

The schematics are hand-drawn and the text is not typeset, but I suspect that you would be buying this manual for the unavailable-anywhere-else type of information, and not just pretty pictures.

If you already have the TI Technical Data manual, should you buy the Hardware Manual? Definitely! The TI manual was put out at the last minute (1983) to allow third party developers to work with the previously closed 4A system, but it was obviously just too late to help. The TI manual is quite dry and is oriented toward professional programmers and designers, whereas the Hardware Manual is more like a friend who sits down and explains how the computer is put together. Oddly

enough, the two manuals compliment each other, with relatively little information duplicated between them.

Value: At \$19.95 each (\$24 outside the U.S.), the Bunyard Hardware Manual is worth the cost if you'd like to have some help in exploring the 99/4A, developing modifications, or add-on cards. The manual comes in a multi-ring binder, like the TI manual, which makes for a sturdy package that's easier to read. And at 140 plus pages, you probably won't be able to read it all in one sitting.

Final Grade: Despite some minor gaps in certain areas and a light discussion of the 9900 assembly instructions, the Hardware Manual is just the ticket for TI hardware hackers. It contains information that

is not available outside of Texas Instruments itself, and it is presented in a readable format. Just about anything you'd like to know about the TI99/4A, its PEB and expansion cards, from an electronic hardware viewpoint, is in the book.

Well written, with a wealth of useful schematics, this manual is an unbeatable asset, especially when used in conjunction with the TI Technical Data manual and expansion card schematics. (Readers interested in obtaining the TI Technical Data manual and schematics for the PEB cards, call Texas Instruments Parts Dept., (806)741-2265, from 8 a.m. to 4:30 p.m., Monday through Friday, for current prices and availability of these items.)

MICROreviews

A utility that many can't do without

By HARRY BRASHEAR

Welcome to my own little corner of MICROpendium, MICROreviews. This is the beginning of a mini-review department, something that has been needed by users and software authors for quite some time. My thanks to John Koloen and Laura Burns for finally recognizing this need and allowing me the privilege of getting it under way.

There are many readers of MICROpendium who believe the sun of the TI world rises and sets within these pages. There might well be some truth in this, but at the same time, there are other branches of the community that are alive and well, and living on GENie, Delphi, and in user groups. The problem is that a lot of good programmers hit these areas, and a lot of the readers of this magazine find out about them later than they should. I am not speaking of the big guys with the big programs, like TI-Base, EZ-Keys, etc., but the guys and gals that are coming up in the ranks. The ones who make music, access tools, utilities, games, and graphics, the ones that might not get noticed for a year or so down the road. It's not their fault, they just don't have the means of letting the world know about what they are doing. These people need recognition and that's what this column is going to do,

review the work of the up and comers.

The other thing I want to do here is to review some of the little commercial programs that just aren't big enough to make a major review. I also intend to keep you abreast of updates on some commercial items that you need to know about, and give bug warnings when I run into them.

Let's do it!

Ratings for the software reviewed in this column will be based on a star system as follows:

- ★ Put it back on the drawing board.
- ★★ Needs improvements, but workable.
- ★★★ A good program, worth trying.
- ★★★★ Send your money and buy it.

★★★

Writerease Update

A long awaited update to Writerease has finally arrived from CorComp. The update will give you something that was badly needed ... the ability to create a user dictionary.

During a spell-check, if the program encounters a word that isn't in its resident dictionary, it moves on to check the user dictionary. If the word isn't found there, you are invited to add it or check the spelling.

As far as I can tell, this is the only upgrade to the program. Badly needed as

it was, there are still a couple of items that I wish CorComp would straighten out.

- Up the drive numbers to nine for the dictionary.

- Give me a way to back out of the "ALL" command in the spell check, like FCTN 9. There's no way out until the program runs into a word it can't find.

In spite of its idiosyncrasies, I still think this is a very good program, and a viable alternative to the Writers. If you look around, you will find that the price is down a little since we first reviewed the program. For update prices, contact CorComp Inc, 2211G Winston Rd., Anaheim CA, 92806.

★★★

M-COPY

Mike Dodd has been at it again. Our resident genius has come up with an offering called M-COPY. This is one of those little programs that doesn't do a lot, but it's, oh, so nice to have around.

M-COPY reorganizes your disk files for you, and preserves your hardware a bit. Let me give you an example; I have many DSDD disks full of instances and graphics. It's one of those situations where you fill up a disk with 127 files, all 4 to 10 sectors in size. Before M-COPY, I would ask for a file from one of these disks and the drive

(See Page 40)

MICROREVIEWS—

(Continued from Page 39)

would chatter like crazy, racing around to find the file. It sounded like the head was going to come out the front end.

With M-Copy, I initialized a new disk and let the program recopy the files from one disk to the other. It reorganized the files and the allocation tables so that the drive could smoothly go to files that I needed. I even notice a big difference when I catalogue the disk because the file list came up a lot faster.

The asking price is \$10 and the program can be found around the big databases, or write to: Mike Dodd, 116 Richards Dr., Oliver Springs TN, 37840.

Nice work Mike!

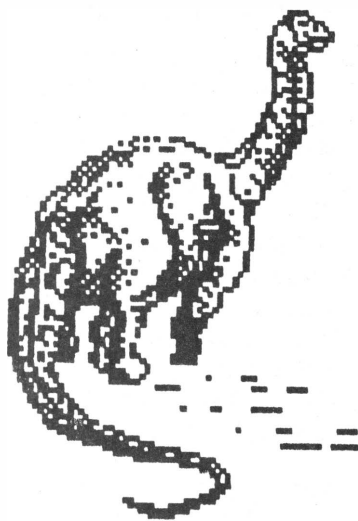
★★★

Disk of Dinosaurs

From Asgard Software comes a Disk of Dinosaurs. Everybody likes dinosaurs, don't they? Actually, there are two disks involved and they are the creation of Ken Gilliland. The dinosaurs come in two formats, cartoon and beautifully done real-life monsters. There are two Artist pictures that you can "paste" the critter instances into, and also a complete dinosaur font. Just to give you a little inspiration, Ken also included some animated sequences using the cartoon versions, and they are fantastic.

To give you an idea of the quality of this offering, take a look at the sample drawing.

The kids are gonna love this set, and just to keep them legal, there is a dinosaur hunting license included on the disk.



I would like to see more of this kind of stuff coming out because it would make TI-Artist more useful to those people that have trouble drawing. This is also an educational tool that should not be ignored.

The Disk of Dinosaurs set is \$12.95 and can be ordered from: Asgard Software, P.O. Box 10306, Rockville MD, 20850. I believe there is also a \$1.50 handling and postage charge.

★★★★

Infocom Fast Loader

If time is money, and all things are relative, then Ray Kazmer is going to save you a fortune ... if you own an Infocom game or two.

The only problem with those great Infocom adventure games is the time it takes to load them. Ray has created a fast loader for each game that will cut the time to

about twenty-eight seconds or less.

I won't get into how it's done, but I can promise you that any novice can handle the program. It will even give you new screen colors if you like, and a true lower case.

I converted all of my Infocom games from two disks to one and spruced them up with Ray's program in about 30 minutes. Then I put the originals away and beat my brains out on Hitchhikers for a couple of days.

This is a four star utility, folks, that means you just send the money and buy it ... only \$7. Send to: Ray Kazmer, 13225 Azores Ave, Sylmar CA, 91342.

BA-Writer bug

Finally, a bug report on BA-Writer V1.5. I have not heard of this happening elsewhere so it's unconfirmed and only my experience.

Since I do a lot of writing, I frequently use BA down to its last byte of memory. I have found that when you get close to the limit and you start moving blocks of text around, the program will duplicate the moved blocks somewhere else in the program. Also, when using "E" to indicate the end of a file in loading parts of text, the program will not give me the entire file. This has also happened when saving parts of a file using "E" instead of the last line number.

Authors who would like their software reviewed in this column may send review copies to: Harry Brashear, 2753 Main St., Newfane, NY 14108. If the software is to be returned, include a SASE.

Please help me make this an exciting column, folks. Don't be shy.

User Groups

The following are additions and updates to our user group listings, which we began publishing in the May 1987 issue.

California

L.A. 99ers Computer Group, P.O. Box 67A79, Los Angeles, CA 90067 (new address).

Florida

West Palm Beach Group, c/o Stanley Krajewski, 103 Shoreview Dr., Greenacres, FL 33463. Meets 7 p.m. first Friday of month at above address. Five members, no dues.

Georgia

Augusta 99ers have disbanded and merged with the Midlands 99ers of Columbia, South Carolina

New York

Central Westchester 99ers, c/o A. Byers, 1261 Williams Dr., Shrub Oak, NY 10508. Robert Amenta, president (914) 356-5771. Meets third Thursday of the month.

Western New York 99ers, 84 Glenhaven Dr., Amherst, NY 14120 (new address). Annual dues \$15.

South Carolina

Midlands 99ers, c/o Larry J. Harpring, President,

645 W. Five Notch Rd., North Augusta, SC 29841-9319. Phone (803) 278-4607, PBBS (803) 754-4996, 300-2400 baud, 8N1, sysop Mike Kimble. Home of the Paradigm BBS by Kimble and Travis Watford and MAX-RLE and Omega by Watford. Approximately 20 members. Based in Columbia, South Carolina. Newsletter. Annual dues \$12.

Outside U.S.

United Kingdom

International TI User Group, 96 Banbury Rd., Oxford OX2 6JT, England. Peter Brooks, proprietor and editor. Phone: 0865 510822. Commercial group supporting TI99/4A, Geneve 9640. Approximately 300 members.

MICROpendium Index

Finishing up 1984 and adding 1985

This is the third installment of Elton Schooling's BASIC index of MICROpendium. Other installments were published in the June and April 1988 editions. Readers who use this index must have the June and April editions available.

The program lines from 10 to 360 are the same for each year, so each annual installment starting with 1985 will begin with program line number 370. Lines 10-360 must be appended to the beginning of each year prior to running since lines 370 and higher are nothing more than DATA statements.

1984 Index continued

540 DATA TACTICS2 GA REV 6/84/18, TAPELOAD USNO 6/84/21, S UH1350N1C USNO 6/84/21, MEM U SNO 6/84/21, MEM1 USNO 6/84/22 !011
550 DATA COLOR USNO 6/84/22, DESKTOP USNO 6/84/22, BASSIZE USNO 6/84/22, BLIND1 (3 ART) 7/84/9, CBOX REV 7/84/13, COMPUERVE 7/84/14 !222
560 DATA RAJIES GA REV 7/84/15, ASSEMBL BOOK REV 7/84/16, WIT GA REV 7/84/17, POLEPOSITION GA REV 7/84/18, ENCHM USNO 7/84/21 !072
570 DATA BOOK ASSEMBL REV 7/84/16 !090
580 DATA PRINT USNO 7/84/21, DISTORTION USNO 7/84/21, 132C HAR USNO 7/84/21, BASPIANO USNO 7/84/21, CLOAD USNO 7/84/22 !057
590 DATA WDFROC USNO 7/84/22, ENCHM USNO 7/84/22, LONGPROG R FEEDB 8/84/4, CLNKEYS FEEDB 8/84/4, BASSIZE 8/84/5 !130
600 DATA AMTION 8/84/9, COPYR 8/84/10, CARE 8/84/11, TIWR 8/84/14, TE TE1200 REV 8/84/15 !200
610 DATA TOWER GA REV 8/84/16, GALACTIC BATTLE GA REV 8/84/17, GALAXY GA REV 8/84/18, FLEXCONV USNO 8/84/21, ERRORFI X USNO 8/84/21 !123
620 DATA CASSIOPEA USNO 8/84/21, COLOR USNO 8/84/21, DESK T FEEDB 9/84/4, MARKET 9/84/6, WYC FORTH REV 9/84/16, FORTH WYC REV 9/84/16 !044
630 DATA MARKXII MODEM REV 9/84/22, MODEM MARKXII REV 9/84/22, AUTOSPELL REV 9/84/23, QUICKCOPYER REV 9/84/24, SPELL CHECK REV 9/84/23 !215
640 DATA WIZDOMINION GA REV 9/84/25, TE1200 USNO 9/84/29, FRANKTALK USNO 9/84/29, MARKX II USNO 9/84/29, MEM USNO 9/84/29, DESKCOPY REV 9/84/24 !054
650 DATA BLINDHANDIC USNO 9/84/29, BLIND USNO 9/84/29, FNC TNCTRI USNO 9/84/29, TE ROUND OFF USNO 9/84/30, POSTAGE USNO 9/84/30 !184
660 DATA POKE FEEDB 10/84/4, PIRACY (2 ART) 10/84/8, ZORK1 GA REV 10/84/20, KILLERCAT GA REV 10/84/22, WYC FORTH 10/84/23, FORTHWYC 10/84/23 !176
670 DATA CRREMOVER USNO 10/84/30 !058
680 DATA DEFENDER GA REV 10/84/24, TIWR USNO 10/84/29, AUTOLOAD USNO 10/84/29, SPEECH USNO 10/84/29, MANNERS USNO 10/84/29 !042
690 DATA PRICES USNO 10/84/29, PRK USNO 10/84/29, CURSOR USNO 10/84/30, SOUNIX USNO 10/84/30, FREEZEIT USNO 10/84/30 !228
700 DATA TE1200 USNO 10/84/30, CLEAR USNO 10/84/30, COMPI T 11/84/10, SCORE 11/84/18, FORTH ENCHMS 11/84/22, ENCHMSFO RTH 11/84/22 !011
710 DATA TRANSTAR PRINTER REV 11/84/24, PRINTER TRANSTAR REV 11/84/24, DESKCTRL (X9900) REV 11/84/25, CC9900 DESKCTRL REV 11/84/25 !190
720 DATA SHUG REV 11/84/31, SHUG BUG FIX 11/84/32, FLOPPY COPY REV 11/84/33, RESTART USNO 11/84/37, CHARSET USNO 11/84/37 !221
730 DATA LABELS USNO 11/84/37, TIFORTH 11/84/37, FORTHFI USNO 11/84/37, MUSIC USNO 11/84/37, COMPINS USNO 11/84/37, R FGVOLTS USNO 11/84/38 !122
740 DATA UNDERLINE USNO 11/84/38, CALLSAY USNO 11/84/38, FREEW USNO 11/84/38, MEM FEEDB 12/84/6, FORTHTIWR FEEDB 12/84/6, TIWRFORTH FEEDB 12/84/6 !024
750 DATA DAPASE DATABASEX REV 11/84/34, DATABASEX DATABASE REV 11/84/34 !042
760 DATA CHIFFAIRE REP 12/84/10, BLACKERIDAY 12/84/18, CIRC PATHS 12/84/19, TIFORTHWYC 12/84/21, CP/M 12/84/25, FORTH TIVSWYC 12/84/21 !233
770 DATA DESKCAT 12/84/27, BPS PHONES 12/84/28, NAVDABASE 12/84/29, GRAVITYMASTER GA REV 12/84/32, ASSEMBL BOOK REV 12/84/33, DABASENAV 12/84/29 !237
780 DATA BOOK ASSEMBL REV 12/84/33 !134
790 DATA CIRCSPRITES USNO 12/84/36, FLOPPYFIX USNO 12/84/36, TRANSTAR USNO 12/84/36, ED GECONN USNO 12/84/36, BASPROG R USNO 12/84/36 !094
800 DATA COL#S USNO 12/84/36, SNDSYMPH USNO 12/84/37, FNCT NX USNO 12/84/37, TIFASTER USNO 12/84/37, FREEW USNO 12/84/37, TREMLO USNO 12/84/37 !110
810 SUB LONGSHELL (N, N\$()) !103
820 D=N !080
830 D=INT(D/3)+1 :: FOR I=1 TO N-D :: IF N\$(1)<N\$(I+D) THEN 860 :: T\$=N\$(I+D) :: J=I !121
840 N\$(J+D)=N\$(J) :: J=J-D :: IF J<1 THEN 850 :: IF T\$<N\$(J) THEN 840 !240
850 N\$(J+D)=T\$!100
860 NEXT I !223
870 IF D>1 THEN 830 !060
880 SUBEND !168

1985 Index

370 DATA FREEW 1/85/12, FORTH HISTORY 1/85/13, FORTHSORT 1/ (See Page 42)

INDEX—

(Continued from Page 41)

- 85/18, SORTFORTH 1/85/18, COMP CARE 1/85/19 !055
- 380 DATA BASORGAN 1/85/24, OR GANBAS 1/85/24, SUFFIXSKETCH REV 1/85/27, FOUND128KCARD 1/85/29, PTERM-99TE REV 1/85/30 !121
- 390 DATA MEMXPAN128K FOUND REV 1/85/29 !164
- 400 DATA TE PTERM-99 REV 1/85/30, TI-RUNNER GA REV 1/85/31, CHARSET USNO 1/85/36, SP5AV ER USNO 1/85/36, PARSEC USNO 1/85/36 !160
- 410 DATA DISKLABELS USNO 1/85/36, SHUGINXBAS USNO 1/85/37, 128K+TE USNO 1/85/37, MULT USNO 1/85/38, PETEREG USNO 1/85/38 !112
- 420 DATA TIWRXLIT 2/85/12, CAT416KS 2/85/15, XLITTIWR 2/85/12, SUPERXBAS 2/85/20, HUGINA SSEMBL 2/85/24, ZORKII GA REV 2/85/25, FREEW 2/85/27 !193
- 430 DATA DISKCAT4 2/85/15, DUMPSCR USNO 2/85/29 !117
- 440 DATA ASSEMBLHUGIN 2/85/24, SCRIDUMP USNO 2/85/29, FORTH USNO 2/85/29, TIWR USNO 2/85/29, SNIDIFF USNO 2/85/29, TAIR REC USNO 2/85/29 !101
- 450 DATA FORTHADDR USNO 2/85/30, CONTACTS USNO 2/85/30, TRACER USNO 2/85/30, TYPING USNO 2/85/30, DIR USNO 2/85/30, HD CUN FEEDB 3/85/8 !008
- 460 DATA FORTHCOMPARED FEEDB 3/85/8 !015
- 470 DATA DISKLABELS ERROR FEEDB 3/85/8, HES 3/85/12, LABELS DISK FEEDB 3/85/8, FOUND128KCD REV 3/85/13, 128KFOUND REV 3/85/13, CX4900BOX 3/85/23 !040
- 480 DATA CP/MCARD REV 3/85/24, WINCHDR REV 3/85/28, SKETCH MATE REV 3/85/30, EMCION REV 3/85/31, MONMIC REV 3/85/31, FREEW 3/85/33 !152
- 490 DATA SPELLCHECK USNO 3/85/35, XBASPROTEC USNO 3/85/35, PARSEC USNO 3/85/35, CONSCOO L USNO 3/85/36, FORTHRESTART USNO 3/85/36 !238
- 500 DATA TIFORTHRSTART USNO 3/85/35, TIFORTHP10 USNO 3/85/36 !044
- 510 DATA STARTORDER USNO 3/85/36, DISKMEM USNO 3/85/36, FORTH10 USNO 3/85/36, MULT USNO 3/85/36, MAGN USNO 3/85/36, CSISC USNO 3/85/37 !252
- 520 DATA PRNTR USNO 3/85/37, DISKBITMAP FEEDB 4/85/8, RUNCS 1 FEEDB 4/85/10, FORUM (2 ART) 4/85/12, GRAPHHUGIN 4/85/24 !092
- 530 DATA CX9900MICROXPAN REV 4/85/27, FORTHTIWR USNO 4/85/35, SCROLLASSEMBL USNO 4/85/36, SORTTXT USNO 4/85/37 !119
- 540 DATA DISK+AID REV 4/85/29, GEMPRNTRS REV 4/85/31, FREEW 4/85/33, MULT USNO 4/85/35, TIWRFORTH USNO 4/85/35, ALLCNC HAR USNO 4/85/36 !079
- 550 DATA ASSEMBLSCROLL USNO 4/85/36, Txisort USNO 4/85/37, HEATSINK FEEDB 5/85/10, FREEW 5/85/18, PRKBAS 5/85/26, CHARSETS&GRAPH REV 5/85/30 !034
- 560 DATA DRAWPILOT REV 5/85/31, FREEW 5/85/33, SAVESCRASSR MBL USNO 5/85/35, XBAS USNO 5/85/36, CHARDISGN USNO 5/85/36, TIMECASS USNO 5/85/37 !118
- 570 DATA CASSTIME USNO 5/85/37 !184
- 580 DATA WIDWRAP 5/85/37, TIFA CIS FEEDB 6/85/10, SOURCE 6/85/16, PRKBAS 6/85/28, HOMIARREW MOD 6/85/32, GRAPHX REV 6/85/36, DATABASE REV 6/85/39 !025
- 590 DATA FREEW 6/85/41, TKWR USNO 6/85/43, SECTORFIX USNO 6/85/43, TIWR USNO 6/85/43, RORERS USNO 6/85/43, CS1VOLTS USNO 6/85/44 !134
- 600 DATA MULT USNO 6/85/44, BARCHART USNO 6/85/44, CALISND USNO 6/85/44, JOYSTTEST USNO 6/85/44, TIWR FEEDB 7/85/10, PRNTRLINES FEEDB 7/85/10 !160
- 610 DATA ENCHM FEEDB 7/85/10, DISKLABELCORR FREEW 7/85/12, CONSUMERELECTRSHOW REP 7/85/14, SUPERCARTASSEMBL 7/85/22, CHARISIGN 7/85/28 !017
- 620 DATA ASSEMBLSUPERCART 7/85/22, DISKFIXADVDIAG REV 7/85/39, QUICKSORTASSEMBL USNO 7/85/43, ASSEMBLQUICKSORT USNO 7/85/43 !069
- 630 DATA ACORN99 DABASE 7/85/34, DABASE ACORN99 7/85/34, ADVDIAGDISKFIX REV 7/85/39, FREEW 7/85/41, TE2BUFF USNO 7/85/43, BUFFTE2 USNO 7/85/43 !164
- 640 DATA DECTOBIN USNO 7/85/44, FOWSUPP USNO 7/85/44, MMBB ATT USNO 7/85/44, ENGLISHNOTE S FEEDB 8/85/10, SUPERCART FEEDB 8/85/12 !092
- 650 DATA JOYSTTEST FEEDB 8/85/12, TIFORTHCORR 8/85/20, IOW 4GAZ REV 8/85/37, TIART REV 8/85/38, PCKEYS REV 8/85/39, BAKKROLL GA REV 8/85/40 !158
- 660 DATA FORTHTICORR 8/85/20 !073
- 670 DATA JOYSTTEST USNO 8/85/43, SAVEISIGN USNO 8/85/43, ACCEPTS USNO 8/85/43, PRNTRROUT USNO 8/85/44, LOWERCASE USNO 8/85/44 !054
- 680 DATA STATICEFIX USNO 8/85/44, TIWR USNO 8/85/44, SUPERCART USNO 8/85/45, DRHOOKUP FEEDB 9/85/10, TIWR CTRLU 9/85/14, CTRLU TIWR 9/85/14 !017
- 690 DATA ADVDIAG FEEDB 9/85/12, CENTERTEXT USNO 9/85/43 !159
- 700 DATA COUPONSAVINGS 9/85/30, MIDNITEMASON GA REV 9/85/36, MYARC 32/128K REV 9/85/37, 32/128KMYARC REV 9/85/37 !175
- 710 DATA GRAPHX COMPANION REV 9/85/39, COMPANION GRAPHX REV 9/85/39, SCROLLDOWN USNO 9/85/42, ACCEPTAT USNO 9/85/42, LINELENGTH USNO 9/85/42 !203
- 720 DATA TXTCENTER USNO 9/85/43, TXTCRAWL USNO 9/85/43, FREEW 9/85/44, TIWR FEEDB 10/85/8, CTRLU FEEDB 10/85/8, CONSPOW FEEDB 10/85/8 !058
- 730 DATA TIWR FEEDB 10/85/12, TINYCAL 10/85/16, GRAPH 10/85/18, ASSEMBL 10/85/20, CAD 10/85/32, 4ATAKTE REV 10/85/42, XBAS11+ REV 10/85/44 !223
- 740 DATA CALENDARTINYCAL 10/85/44

(See Page 44)

Newsbytes

Texaments releases support software

Texaments has released new software to support the TI Artist and Designer Labels programs.

For TI Artist, it has released what is planned as the first in a series of Starfleet Technical Drawings, as well as Artist's Companion #8 and Artist's Companion #9.

The Starfleet Technical Drawings are images of the various starships that appear in the Star Trek television series and motion pictures. According to Steve Lamberti, president of Texaments, each of the Federation and Klingon starships may be used, altered and printed with the TI Artist drawing system. The images include warships and freighters from both the United Federation of Planets and the Klingon Empire. Also included, Lamberti says, are detailed drawings of the Starship Enterprise as it has appeared throughout its 20-year film history. In addition, each individual disk contains a file that allows the images to be automatically viewed in slide show format using Display Master (sold separately).

The three-disk set of Starfleet Technical Drawings consist of three disks and is available for \$9.96 plus \$2.50 shipping. Lamberti says that for a limited time only the set may be ordered with Display Master for \$22.50 plus shipping.

Artist's Companion #8 is a two-disk set with 12 fonts, 38 instances and five borders. Artist's Companion #9 is a two-disk set with 14 fonts, 30 instances and five borders. Lamberti says three of the fonts included are a combination of both text and graphics, while most contain complete numerics and punctuation.

Lamberti says the addition of predefined borders is new to the Artist's Companion series. He says the borders can enclose or showcase graphics and text and range from standard picture frames to chains, spots and billboards.

Artist's Companion #8 and Artist's Companion #9 are available for \$9.95 each plus \$2.50 shipping, or in a Super Saver package for \$17.90 plus shipping.

Designer Labels Companion #1 and Designer Labels Companion #2 are for use with the Designer Labels software, which was created to allow TI Artist users to de-

sign and print instances repetitively in a number of standard mailing label sizes, or on 3x5-inch and 4x6-inch index cards.

Both Designer Labels Companion products include a series of predefined frames that can be used to "dress up" labels and act as a guide for creating labels that conform to standard mailing label sizes. Also included, Lamberti says, are "blank" frames that can be used to design other frames or as a guide to creating frameless labels. Each frame style comes ready-to-go in three standard label form factors: 1 $\frac{5}{16}$ -inch, 1 $\frac{7}{16}$ -inch and 1 $\frac{1}{16}$ -inch. Examples of various labels are included.

Designer Labels Companion #1 is a three-disk package consisting of 12 frame styles, including one blank frame set, and is available for \$9.95. Designer Labels Companion #2 is a two-disk package consisting of seven frame styles, including one blank frame set, and is available for \$7.95. A Super Saver package containing both can be purchased for \$15.90 and one containing both with Designer Labels for \$23.90. A \$2.50 shipping charge applies to all orders.

For further information or to order, contact Texaments, 244 Mill Rd., Yaphank, NY 11980 or (516) 345-2134.

Hyper Copy for Geneve

Genial Computerware is planning to release Hyper Copy at the Chicago TI Faire, Nov. 12. The program, by Mike Dodd, is the first commercial program to run in the MDOS mode on the Geneve.

Hyper Copy will copy a double-sided, 40-track disk in just under a minute, including formatting the copy disk. An 80-track disk takes just under two minutes.

Additionally, it is the first program for the TI or 9640 to allow formatting a disk with a "skew." Skew is a technique whereby the physical layout of a disk can be shifted on each track, resulting in a much faster sector read. No longer will the computer pause between tracks — it will step and continue reading without any apparent pause. This allows Hyper Card to format a disk without copying. It also allows a "box format," similar to what DM1000 has.

Hyper Copy also supports multiple copies of the same disk. You can read a disk into memory and then write it out to multiple disk drives. After all the disks are written to, all you have to do is switch disks and press a key, and Hyper Copy will write to the disks again.

A common problem with other fast disk copiers for the 99/4A and 9640 have been that they access only physical disk drives. If you wanted to copy a floppy to a RAM-disk or a RAMdisk to a floppy, you had to use a normal, slow disk copier. Hyper Copy fully supports reading and writing from/to logical devices such as a RAMdisk.

Hyper Copy runs on the Myarc, CorComp, and TI disk controller cards. To order, send \$20, plus \$1 shipping, to: Genial Computerware, P.O. Box 183, Grafton, MA 01519.

Tex-Comp to sell Collins Starter Packs

Tex-Comp has acquired the exclusive North American distributorship for the Collins Starter Packs and Game Writers' Packs, according to Tex-Comp vice president Jerry Price.

The packs originate in England. One of the packs was reviewed in the September 1988 MICROpendium.

The four-pack sets sell for \$9.95 on cassette or \$12.95 on disk, plus \$3 shipping and handling (\$4 shipping and handling in Canada).

To order, contact Tex-Comp, P.O. Box 33084, Granada Hills, CA 91334 or (818) 366-6631.

Donaldson Software cuts prices on games

Donaldson Software has cut all prices on its software to \$8.95 per game, according to Floyd Donaldson, president. He says that because of the coming holiday season, the Professional Blackjack cassette will be given away free with any order from Donaldson Software. Programs from the company are cassette only.

He says because of the number of word processors on the market, it is uncertain

(Continued on Page 44)

Newsbytes

(Continued from Page 43)

whether the company's previously-announced D.S. Writer will be released. The program is in beta testing, he says.

For further information, or to order, write Donaldson Software, 521 Lievre St., Buckingham, Quebec, Canada J8L 2C2.

Texlink BBS operating

A Texlink BBS is operating in Halifax, Nova Scotia, Canada at (902) 455-2076. Sysop is Paul A. Meadows. The 24-hour board operates at 300 and 1200 baud and is expanding to a hard drive soon, Meadows says.

Newsbytes is a column of general information about products, services and activities relating to TI users. The publisher does not necessarily endorse products listed in this column. Vendors, manufacturers and others are encouraged to submit items for consideration. Photos will be used when space permits. Materials cannot be returned.

INDEX—

(Continued from Page 42)

85/16, TE 4ATALK REV 10/85/42 !000

750 DATA XHDETCTIVE REV 10/85/46, CONSWRNNAV WDFROC REV 10/85/47, NUMTALK USNO 10/85/52, CROM USNO 10/85/52, T1WR USNO 10/85/53, AMORTIZE USNO 10

/85/53 !024

760 DATA WDFROC NAVCONSWR REV 10/85/47 !236

770 DATA TKWR USNO 10/85/53, 4ATALK FEEDB 11/85/8, CHIFAIR E REP 11/85/12, BRITISHTI REP 11/85/24, ASSEMBL SEUG 11/85/30, SHUG ASSEMBL 11/85/30 !168

780 DATA FOUNDZ80CD REV 11/85/40, 9900BAS COMPILER REV 11/85/43, ADVENTUREFD GA REV 11/85/44, ACCEPT USNO 11/85/48, CURSOR USNO 11/85/48 !144

790 DATA COMPILER 9900BAS REV 11/85/43 !092

800 DATA JOYSTLDR USNO 11/85/49, INSANITY USNO 11/85/49, S CIRCOLOR USNO 1/85/50, 40XOL USNO 11/85/50, FREEW 11/85/52, DSKDR FEEDB 12/85/8 !166

810 DATA NUMTALK FEEDB 12/85/8, FREEW (3 ART) 12/85/12, WY CFORTH 12/85/20, FORTHWYC 12/85/20, ASSEMBL 12/85/22, FREEW 12/85/36, DRHOOKUP 12/85/38 !000

820 DATA DSPNHANCE REV 12/85

/43, TRIPT REV 12/85/44, BASCI RC USNO 12/85/49, SUPRS USNO 12/85/49, BASXL USNO 12/85/49, DV80TOFROGR USNO 12/85/50 !145

830 DATA CIRCBA5 USNO 12/85/49, XLHAS 12/85/49, XLATE DV80TOFROGR USNO 12/85/50, DV80TOFROGR XLATE USNO 12/85/50 !067

840 DATA TINYCALCORR USNO 12/85/50, MUSMAKER USNO 12/85/52 !230

850 SUB LONGSHELL(N,N\$()) !103

860 D=N !080

870 D=INT(D/3)+1 :: FOR I=1 TO N-D :: IF N\$(I)<N\$(I+D) THEN 900 :: T\$=N\$(I+D):: J=I !161

880 N\$(J+D)=N\$(J):: J=J-D :: IF J<1 THEN 890 :: IF T\$<N\$(J) THEN 880 !064

890 N\$(J+D)=T\$!100

900 NEXT I !223

910 IF D>1 THEN 870 !100

920 SUBEND !168

User Notes

British users have sort utility for TI Base

British Tler Steven Shaw writes:

One of the severest shortcomings of TI Base is the single key sort. Here in the UK we have been able to keep our user group members satisfied with a sort utility, SORT1, which we have licensed from Software Specialities Inc. The utility can sort *any* file on up to eight keys.

SORT1 works very well as an external utility for TI Base files where the records are less than 255 characters — use standard TI blocking.

SORT1 gives a different result to the normal TI base sort, as it carries out an actual sort rather than an indexed sort. That is, the top record after sorting will have Record Number 1.

Shaw has provided information about SORT1 to Texaments. Readers who know where this utility is available in the U.S.

may want to pass along that information to us for publication.

Status check of Alpha Lock

The following item comes from Mike Gikow of Andover, Massachusetts. He writes:

The following listing contains an XB program to check the status of the Alpha Lock key and an assembly routine, which must be assembled and saved as DSK1.K/O. The program works by brute force and is not an elegant solution. Here's how:

The keyboard is connected to the 4/A by the TMS 9901 integrated circuit which uses the Communications Register Unit (CRU) and is accessed by CRU instructions, like SBZ, SBO and TB (SET BIT ZERO, SET BIT ONE and TEST BIT.) TI's technical data manual indicates that

(See Page 45)

Myarc Geneve 9640 IN STOCK!!

ENHANCED KEYBOARD SALE PRICE \$549.00

★★★★ OTHER MYARC PRODUCTS ★★★★★

MYARC HARD AND FLOPPY DISK CONTROLLER WITH CABLES-----\$325.95
512 MEMORY CARD FOR GENEVE \$229.95
99/4A FLOPPY DISK CONTROLLER \$164.95
GENEVE MY-ART AND MOUSE-----\$125.95
MYARC RS232-----\$119.95

HOLIDAY SPECIAL

GENEVE 9640 AND MY-ART WITH GENEVE MOUSE, PURCHASE BOTH-----\$645.95

SEND ORDERS TO :

Mosher Computer Services

17175 NW 41 AVE MIAMI, FL. 33055

CARL MOSHER PRESIDENT

\$ H \$5.00 EACH ITEM. FLA. RESIDENTS

ADD 6% SALES TAX. PERSONAL CHECKS

REQUIRE UP TO FOUR WEEKS TO CLEAR.

User Notes

(Continued from Page 44)

the Alpha Lock key is connected between the output for CRU BIT 21 and the input for CRU BIT 7.

When the switch is closed, the output can be read by the input. The programs tests the condition of the switch, then writes a value of (-1) or (0) to memory

locations -1 and -2. The CLR instruction produces the (0) and SETO produces the (-1). A standard return statement then returns control to XB. The CALL LINK statement then tests memory location -1 for a value of (0) or (-1). Note that -1 is read as 255 by the CALL PEEK statement. Here's the assembly routine:

*Program source K/S, object K/O, run by K (XB)
*Checks Alpha Lock button status. By Mike Gikow

```

DEF ALPHA
ALPHA MOV R12,0>FFFC      Save old R12
CLR R12                    TMS 9901 CRU base = 0
SBZ 21                     Send signal to Alpha Lock Key line
TB 7                       Check Alpha Lock Key, other side
JNE STATE                 Jump if on state, don't if off
SETO 0>FFFE              Off state here
JMP JUMPA                 Skip next line, if off state
STATE CLR 0>FFFE          On state here
JUMPA SBO 21              Stop sending to Alpha Lock key
MOV 0>FFFC,R12            Restore old R12

```

*Standard return to X Basic:

```

SB 0>837C,0>837C      Clear error for Basic
B 0>0070              Return to calling program
END ALPHA

```

And this is the XB portion (in 28 column format, just as it should look on your screen.) Pressing and releasing ONLY the Alpha Lock key, changes the (A\$) message.

```

100 ! "K" BY MIKE GIKOW
110 ! USED WITH K/O
120 ! MODIFIED SLIGHTLY, BY
    RAY KAZMER

```

```

130 CALL INIT :: CALL CLEAR
140 CALL LOAD("DSK1,K/O")
150 CALL LINK("ALPHA")
160 CALL PEEK(-1,A)
170 IF A=0 THEN A$="YOUR ALP
    HA LOCK IS down." ELSE A$="Y
    OUR ALPHA LOCK IS UP!"
180 DISPLAY AT(12,3):A$ :: G
    TO 150

```

Two versions on one disk

This comes from Ray Kazmer, of Sylmar, California. He writes:

In case you were unaware of it, your Funnelweb (V4.1) disk actually contains two versions of Funnelweb. The XB loading version is named LOAD and the E/A loading version is named UTIL1. This V4.1 disk also has one of the slickest programs I've ever seen called CONFIGURE, which changes text/screen colors and rearranges menus (all with "windows") just to name some of its amazing capabilities.

But, I'm a grad of the Hack and Slash School of Convuluted Computing (our motto is: "Never read docs, unless you

want to admit defeat.") However, I rarely lose a program, because my numero uno rule is: "never mess with your originals, always make a copy, and butcher that instead!" (I suggest you observe that rule, before attempting any of the following trickery.)

Using CONFIGURE (without reading the docs) I somehow managed to alter the text and screen colors in UTIL1. When I tried it on LOAD, however, I overwrote the LOAD program, and destroyed it. It was my fault, I know, but still being reluctant to read the docs (and hating to admit defeat) I copied LOAD from my "safe"

original, and sought an alternative way to change the text and screen colors.

Using a sector editor, I found that by changing 1 byte in the LOAD file, and 1 byte in UTIL1, I could change the text/screen colors, to whatever combination I wanted, without having to read the docs. (Phew! What a relief!) Here's how:

1—Make a copy of your Funnelweb 4.1 disk, then load your favorite sector editor.

2—Do a "FIND FILE" to locate "LOAD." (Or UTIL1, if you already did LOAD.)

3—Count backwards, three sectors, from the highest numbered sector. (If your highest numbered sector is 100, as an example, you'd count: 100, 99, 98.)

4—Edit the third highest sector. (In the example, sector 98.) This process is the same, for either LOAD or UTIL1.

5—Select the HEX mode (not ASCII) then, for LOAD, place the cursor on byte 91. For UTIL1, on byte 86. Someplace very near the cursor (just to the left or right) you should see an "identifying string" of HEX numbers. The last two numbers in those strings, correspond to text and screen colors, in HEX.

For LOAD, look for: FD0380F4. F4 equals white letters, dark blue screen.

For UTIL1, look for: FD0380F5. F5 equals white letters, light blue screen.

6—Select desired colors from this chart:

COLOR	#	COLOR	#
Transparent	0	Medium Red	8
Black	1	Light Red	9
Medium Green	2	Dark Yellow	A
Light Green	3	Light Yellow	B
Dark Blue	4	Dark Green	C
Light Blue	5	Magenta	D
Dark Red	6	Gray	E
Cyan	7	White	F

7—Type over the F4 in LOAD (or the F5 in UTIL1) what you want your text/screen colors to be. Example: for gray characters on a black screen, you would type: E1.

8—Write the changed sector to your copy disk. Break out of your sector editor, and test your customized Funnelwriter, with both XB and E/A, option 5. If it suits you, keep the change. If you do not like your changes, you can always put it back the way it was...maybe.

(See Page 46)

User Notes

(Continued from Page 45)

This whimsy is meant only as general information, with my sincerest apologies to Will McGovern, who, I feel, is one of the finest 99/4A programmers alive. (I sure hope that gets me off the hook!)

AUTOEXEC from a hard disk

This is one of those suggestions that seems so obvious that you wonder why you never asked. It has to do with loading the MDOS AUTOEXEC file from a hard disk, rather than a floppy. With currently available versions of MDOS, the AUTOEXEC file must reside on physical floppy drive 1 to be accessed. This means it can't be accessed from a subdirectory called DSK1 on a hard disk.

However, according to Bob Boone, you can have the AUTOEXEC file load from WDS1 by modifying the SYSTEM/SYS file with a sector editor. Simply look for the appearance of AUTOEXEC on the SYSTEM/SYS file. AUTOEXEC will appear twice on the same sector, preceded by DSK1. (With Disk Utilities, and SYSTEM/SYS saved to a fresh floppy, the sector is at 00ED.) Change the DSK1 to WDS1 in both occurrences, save the sector back to disk and save the SYSTEM/SYS file back to WDS1, along with an AUTOEXEC file. Boone posted this suggestion on Delphi, and it works like a charm. Geneve users with hard disks no longer have to wait for the final version of MDOS to access AUTOEXEC files from their hard disks.

TELCO V2.2 and hard disks

Charles Earl has released Version 2.2 of his terminal program TELCO. It provides better support for hard disks than previous versions, among other things. Previously, TELCO users could load the program from a hard disk as long as the program resided on WDS1.DSK1. V2.2 allows the user to set a hard disk path to load the program. Here's how to do it:

1. Load TELCO from a floppy and hold down the Enter key.
2. You will be prompted to enter a path name. Enter it in this fashion:

WDS1.TELECOM. (make sure a period is used after each subdirectory name.

3. Press Enter when finished. Reboot the program and you'll be able to load it from the designated subdirectory.

TELCO can be obtained from many bulletin boards or from the author for \$20. Send check or money order to: Charles Earl, 34 McLeod St., Ottawa, Ontario, K2P 0Z5.

Fixing glitched files with Rediskit

This comes from Ken Schmidt, who posted this information on the GENIE network. It requires Rediskit, a fairware copy program by Jim Schroeder.

I got an adventure graphics game on disk at our last club meeting. After playing through several screens the next one to load stopped with a syntax error. Listing the program showed several lines of code to be glitched. Trying to edit out the glitched code caused the screen to change from blue to red and then lock up the computer. Not wanting to wait a month for the next club meeting to exchange the disk I decided to experiment.

First, I copied the disk with Rediskit. (The program on the original disk would not even load because of a bad sector.) Rediskit apparently fills in the glitched sectors with loadable data even though the lines won't make any sense when listed to the screen.

Next, I saved the program to disk with the command LIST "DSKx.filename".

This DV/80 file must next be printed to disk with the TI-Writer Formatter. It will

not load into the Editor after listing because the file still has the glitches in it.

Now load the file into the TI-Writer Editor and delete the glitched lines and print back to disk with the command C DSKx.FILENAME to remove linefeed symbols put in by the formatter. If you are lucky to have a printout of the program before it got glitched it will be easy to add the missing code and the convert it back to program format with a DV/80-program conversion utility.

In my case the next screen to load after this one had identical code except for a few lines that were different, so I added the lines and thus reconstructed the glitched program. If neither of the above options are available you could try guessing at the missing code. Of course, if you knew of someone else that bought the same disk and had a modem, he could send a replacement for the bad file to you, but that is not much of a challenge.

The above procedure will also work for glitched DV/80 message files from BBS. This is a lot easier as most of the above steps can be eliminated. Sometimes just printing the glitched file from the formatter to printer is all that is necessary if you do not wish to save the file for latter use.

User Notes is a column of tips and ideas designed to help readers put their computers to better use. The information provided here comes from many sources, including TI user group newsletters. MICROpendium pays \$10 for any item sent in by readers that appears in this column. Mail User Notes to: MICROpendium User Notes, P.O. Box 1343, Round Rock, Tex 78680.

Classified

HOME BANKING

Common sense, productivity software for your 99/4A. For more information, write to E & M Software, Box 551, Oscoda, MI 48750. v5n11

FALL CATALOG AVAILABLE

Asgard Software's fall catalog is available. \$1 refundable on first purchase. Send to Asgard Software, POB 10306, Rockville MD 20880. v5n9

TI NET HELP DISK

Learn your way around the TI International Users Network with this auto-load, printable Help Disk. FREE XMODEM for TI users to D/L a communications program. Online sign up offer on Help Disk — Send \$2.00 deposit. Deposit returned as online time credit when you join TI NET. Supply limited! — TI NET, P.O. Box 244, Lorton, VA 22079. v5n9

Classified

Software

CHECKBOOK RECONCILE \$29.95

Balance to the penny every month. Rocketman Checkbook Program. See our program review in August 1987 MICROpendium. California Programs, 4426 Appian Way, El Sobrante, Ca. 94803. 415-222-1626. v5n9

!!! NEW !!!

Audio Cassette and VCR
LABELMAKER
for Myarc 9640 and
Epson Compatible printers

- professional looking label and inserts
- sorted library index
- user-easy 80 columns
- fast crisp printouts
- only \$1495 postpaid

DON WEST SOFTWARE
43 Park Avenue
Wethersfield, CT 06109

v5n9

Hardware

FOR SALE

Myarc 512K card fully expanded with 128K Eprom and power supply \$200. Call Tom 419-281-1541. v5n9

Miscellaneous

P-CODE CARD WITH ALL DISKS

AND MANUALS	\$140
P-CODE CARD ALONE	\$ 89
FULL TI PE/BOX plus \$20 s&h	\$349
18" P-BOX FLAT EXTENSION CABLE	\$ 22
PARALLEL PRINTER CABLE 6'	\$ 20
WORD WRITER +	\$ 45
STAND ALONE DISK DRIVE (NEW)	\$ 89
STAND ALONE DISK DRIVE DSDD	\$ 99
STRIKE 3 (basebakk cart)	\$ 19
TI ORIGINAL COLOR MONITOR	\$175
SUPER EXTENDED BASIC	\$ 55
AVATEX MODEM 1200HC	\$ 99
AVATEX MODEM 1200e	\$ 89
for complete list	
JIM LESH, 722 HUNTLEY	
DALLAS, TEXAS 75214, 214 821 9274	v5n9

Policy

The cost of classified advertising is 25 cents per word. Classified display (i.e., special formatting or graphics) is \$9 per column inch. Classified advertisements must be paid in advance. Classified advertisers may request a category under which they would like their advertisement to appear, but the final placement decision is the responsibility of the publisher.

Classified deadlines will be kept open for as long as practical. For the purpose of classified advertising deadlines, any classified ad received later than the first day of any month cannot be assured of placement in the next edition. We will do our best to include every advertisement that is submitted in the earliest possible edition.

The publisher offers no guarantee that any advertisement will be published in any particular issue. Any damages that result either from errors in copy or for failure to be included in any particular edition will be limited to the amount of the cost of the advertisement itself. The publisher reserves the right to reject any advertisement.

The advertiser may elect to publish the advertisement in subsequent editions at the same charge, payable prior to publication. The deadline for carryover classifieds is the same as for new advertising.

In submitting an ad, please indicate whether you would like a refund if it is not published in the requested edition or whether you would like us to hold it for the next edition. Cancellations and refunds cannot be made after the second day of the month.

Send classified advertising to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

Software

CREDIT CARD ORDERS

For Genial Computerware, Horizon RAM Disk and ASGARD Software products. Send your orders to: DOS Software Division, P.O. Box 244, Lorton, VA 22079 or call 1-800-456-9272. Visa, M/C, Amex. v5n9

Systems

TI99/4A SYSTEM

B&S Console w/ML SYSTEMS IBM key board adaptor, PEBox, RS232 32K, controller, 1 drive, 30 TI books, 24 HCM, 40 MICROpendium, 75 BCS disks, XBASIC, TI Writer, MP, TEII, Modem, E/A, Monitor Asking \$390.00 Possibility to sell parts.

Printer, IBM key board extra. Call Craig Miller after 6 pm 617-926-2724.

SYSTEM

(1) TI99/4A, Expansion Box, SSSD Disk drive, TI Disk Controller card, Myarc RS232 card, Foundation Computing 128K Memory card, TI 32K Memory card, Speech Synthesizer, Navarone Cartridge Expander, all manuals and software, including: TI Disk Manager, Extended BASIC, TI Writer, Microsoft Multiplan, Checkbook reconcile and many more. → \$375.00 ←

(2) TI99/4A, Expansion Box, CorComp Disk Controller with two DSDD, RS232 & Free Softwares. → \$399.00 ←

Systems

(3) Geneve W/Mouse, Hardly used. → \$350.00 ←

(4) TI99/4A Keyboard → \$40.00 ←
Call (305) 865-3354 or mail Money Order/Cashiers check to: RAY DIAZ, 3900 N.W. 79th AVE, #500, MIAMI, FLORIDA 33166.

ALL SOLD AS PACKAGES, SERIOUS BUYERS ONLY v5n9

Miscellaneous

Texas Instruments

TI99/4A

Hardware & Software

— TURBO-PASC'99 (Pascal)! \$59.95 E/A required.—
Proto-Board for PEB by Willforth only \$35. Joy-Sticks \$10.00 XB Detective \$10.00. Rave '99 KeyBoard!! \$199. Speech Editor \$20. Printer Cable (PIO) \$24. Jungle Hunt, Protector II, Moon Patrol, PacMan \$15 ea. TI Dust Cover \$4, Adventure \$10.00 Adv Hint Book \$8. TI Extended Basic \$40, P-Code Card w/software \$159. TI-Artist \$20. Princess & Frog, AntEater, HenPicked \$10 ea.

*TI-BASE \$25 (great!) Data Base, PEB Hardware Manual 32K, Disk Ctrl, RS232, Ramdisk Cards, Cables & Connectors

L.L. CONNER ENTERPRISE COMPUTER&ELECTRONICS

1521 Ferry Street
Lafayette, IN 47904

CALL 317-742-8146 or CALL 317-423-4879 to order UPS today!

Visa or M/C Accepted, add \$3 shipping

v5n9

The LEADING monthly devoted to the T199/4A

Subscription Fees

\$20 for 12 issues via domestic second class mail

\$25.25 (U.S. funds) Mexican delivery

\$27.50 Canadian delivery

\$25.00 (U.S. funds) for 12 issues other foreign delivery via surface mail

\$37.00 (U.S. funds) for 12 issues other foreign delivery via air mail

Outside U.S., pay via postal or international money order; personal checks from non-U.S. banks will be returned

Address Changes

Subscribers who move may have the delivery of their most recent issue(s) delayed unless MICROpendium is notified six weeks in advance of address changes. Please include your old address as it appears on your mailing label when making an address change.

Back Issue Policy

Back issues of MICROpendium are available to subscribers only. Those wishing back issues may notify us of the issue(s) desired and include \$2.00 per issue desired in a check or money order. No shipping charge in U.S. and Mexico; Texas residents add 7.5% sales tax. Shipping charge of 30 cents per issue to Canada. For other foreign delivery, add 50 cents per issue surface mail, \$2 per issue air mail. No discounts on orders of sets. All prices U.S. funds. **OUT OF STOCK: Vol 1, nos. 1-2**

Tell us about it

Please let us what columns or features you like the most about MICROpendium. Rank your selections in order of preference using this form. Return it to us when you renew your subscription.

1. _____

2. _____

3. _____

4. _____

Other suggestions: _____

Send me the next 12 issues of MICROpendium. I am enclosing \$ _____ in a check or money order in U.S. funds. Mail to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680

Name _____

Address _____

City _____

State _____ ZIP _____

The set of numbers on the left of your mailing label indicates the cover date of your last issue.

v5,n9